

The new
name for
COMPUTING
WITH THE
AMSTRAD **GPC**

Vol. 4 No. 12
December 1988
£1.25

COMPUTING

A DATABASE PUBLICATION

Switch on to C

LISTINGS

File copying made easy
Solve Rubik's Clock
Play Santa's Dungeon

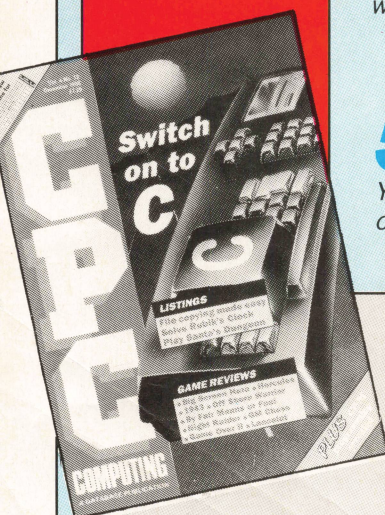
GAME REVIEWS

• Big Screen Hero • Hercules
• 1943 • Off Shore Warrior
• By Fair Means or Foul
• Night Raider • GM Chess
• Game Over II • Lancelot

PLUS CP/M
programming
revealed

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Basic and machine code aren't the only games in town. So read about the pros and cons of taking up the language that professional programmers are raving about. It may be just what you've been waiting for.



59 POSTBAG

Your forum for feedback — air your views and opinions, and ask or answer questions.

It's goodbye ... and hello!

This is the last issue of *CPC Computing* in its present form. Next month we merge with the official CPC magazine, *Amstrad Computer User* — combining our resources to bring you the biggest, best, most informative CPC magazine ever! Turn to Page 53 for news of a great money-saving offer!



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35 PRODUCT UPDATE

We bring you news of enhancements to two packages reviewed recently — CP/M Plus on rom and accounting for the small business.

LISTINGS

9 RUBIK'S CLOCK

With this easy-to-use program you can solve the fiendish puzzle which'll be in every home this Christmas.

Tel: 0625 878888 (All depts.)

MicroLink/Telecom Gold: 72:MAG001 Fax: 0625 879966

Prestel Mailbox: 614568383. Telex: 9312188888 DB

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Can you save Santa from being blown up, stabbed in the back and starved to death?

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44 ADVENTURE REVIEW

Level 9 is making a bid to be top UK adventure house with Lancelot. Gandalf mounts his trusty steed to give a verdict.

48 QUEEN OF CHEATS

Tiffany brings you pokes and tips for games new and old including Pro BMX Simulator, Skateboard Kidz, and Metal Army.

Gallup Software Chart

Seven new and re-entries this month – just in time for Christmas, too. Top of the poll is the arcade conversion of Bombjack. The sequel to Joe Blade enters in second place and is excellent value.

THIS MONTH	LAST MONTH	TITLE (Software House)	PRICE
1	10	BOMB JACK <i>Encore</i>	1.99
2	•	JOE BLADE 2 <i>Players</i>	1.99
3	•	DALEY THOMPSON'S OLYMPIC CHALLENGE <i>Ocean</i>	9.95
4	•	KIK START 2 <i>Mastertronic</i>	2.99
5	1	AIR WOLF <i>Encore</i>	1.99
6	7	GAUNTLET <i>Kixx</i>	2.99
7	8	YOGI BEAR <i>Alternative</i>	1.99
8	•	ACE OF ACES <i>Kixx</i>	2.99
9	•	ADVANCED PINBALL SIMULATOR <i>Code Masters</i>	1.99
10	5	FOOTBALL MANAGER 2 <i>Addictive</i>	9.99
11	12	EUROPEAN FIVE-A-SIDE <i>Firebird</i>	1.99
12	3	BATTLESHIPS <i>Encore</i>	1.99
13	17	FRANK BRUNO'S BOXING <i>Encore</i>	1.99
14	2	ATV SIMULATOR <i>Code Masters</i>	1.99
15	4	STUNT BIKE SIMULATOR <i>Firebird</i>	1.99
16	16	SUPER STUNTMAN <i>Code Masters</i>	1.99
17	•	BATTLE VALLEY <i>Rack-It</i>	2.99
18	11	OUT RUN <i>US Gold</i>	9.99
19	•	GHOSTBUSTERS <i>Mastertronic</i>	1.99
20	14	STEVE DAVIS SNOOKER <i>Blue Ribbon</i>	1.99

Learning has never been such fun!

A computer is an ideal teaching tool for young children – if you have the right software.

Fun School 2 is available for three age groups: Under-6s, 6-8 years and Over-8s. Each pack consists of eight colourful and exciting programs carefully designed by a team of educationalists.

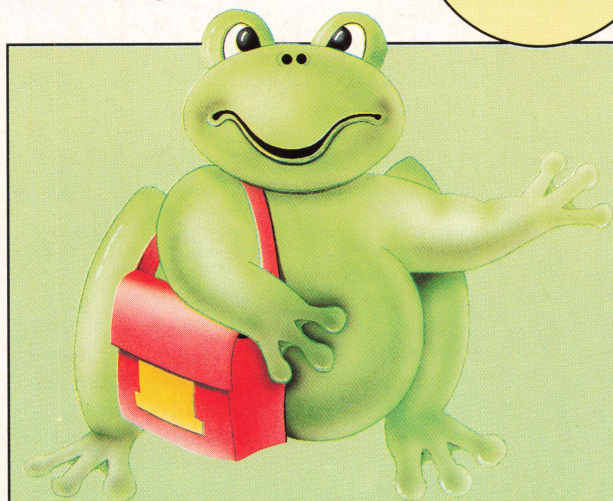
The computer itself monitors the child's progress. The skill level – initially set by parents – is automatically adjusted to suit the child's ability.

Now children can enjoy using their parents' computer while they learn at their own pace.

You can give your children an unfair advantage with Fun School 2 – it's the ideal way to introduce youngsters to the joys of using computers.

Detailed instructions are supplied with each pack giving educational help to parents and teachers, together with full instructions for each program.

**A colourful
button badge
with each
package!**



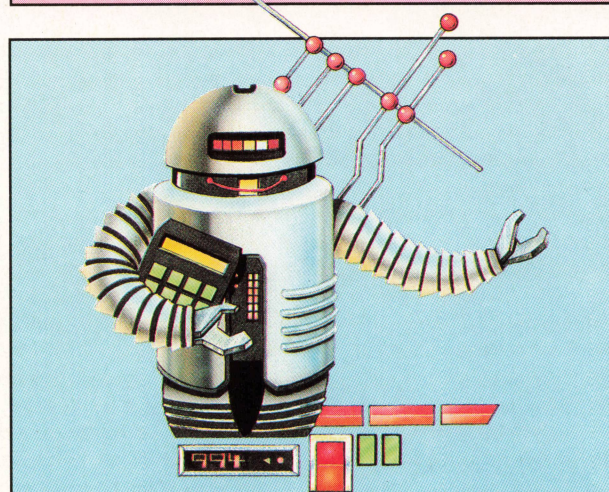
Fun School 2 for 6 to 8 year olds contains:

- **Number train:** Calculations made enjoyable
- **Shopping:** Which shops for which products?
- **Maths Maze:** Fun improving arithmetical skills
- **Treasure Hunt:** Introduction to coordinates
- **Bounce:** Get to grips with angles
- **Packing:** Discover tessellating shapes
- **Caterpillar:** Word building challenge
- **Number jump:** Have fun practising tables



Fun School 2 for Under-6s contains:

- **Shape Snap:** Colourful shape recognition
- **Find the Mole:** Experiment with number sizes
- **Teddy Count:** Ideal introduction to numbers
- **Write a Letter:** Creative fun at the keyboard
- **Colour Train:** Play at spotting colours
- **Pick a Letter:** Word building made easy
- **Spell a Word:** Enjoy naming the pictures
- **Teddy Bears Picnic:** Move around a maze



Fun School 2 for Over-8s contains:

- **Build a Bridge:** Shape-fitting challenge
- **Passage of Guardians:** Enjoy anagrams
- **Unicorn:** First steps in problem solving
- **Logic Doors:** Mapping made easy
- **Souvenirs:** An introduction to travel
- **Code Boxes:** Discover binary arithmetic
- **Mystery machine:** Have fun breaking codes
- **Escape:** A final check on progress

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Please supply Fun School 2 on ☐ tape at £9.95* ☐ 3in disc at £12.95*
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Update

Entertainment Centre hits the spot

French titles for CPC

FRANCE is to provide a string of CPC releases for Active Distribution to market in the UK.

Active (01-385 7622) will sell titles produced by French software house Coktel Vision, including *Jungle Book*.

"This is a classic film that appeals to young and old", said Active managing director Robert Stallibrass. "It is being promoted again this Christmas which will ensure a high level of product awareness for the computer game."

"Future CPC titles from Coktel Vision will include *Freedom*, *Emanuelle*, *Terrific* and *Peter Pan*".

Accent on action

A TRIPLE attack on the Christmas market has been launched by Gremlin Graphics (0742 753423).

New CPC titles are soccer simulation *Roy of the Rovers*, Round Table legend *Artura* and space adventure *Dark Fusion*.

Gremlin has also announced Vietnamese war action game *Butcher Hill* for release early in the New Year. Prices £9.99 on tape, £14.99 on disc.

Seeing clearly

TWO new anti-glare screen filters designed for the CPC have been released by Compumart (0509 610444). Made using micro-mesh material, they fit both colour and mono CPC monitors, and cost £12.95.

"The filters' design eliminates all reflection and dramatically reduces glare from the CPC screen", said Compumart director Steven Burke.

Budget breakout

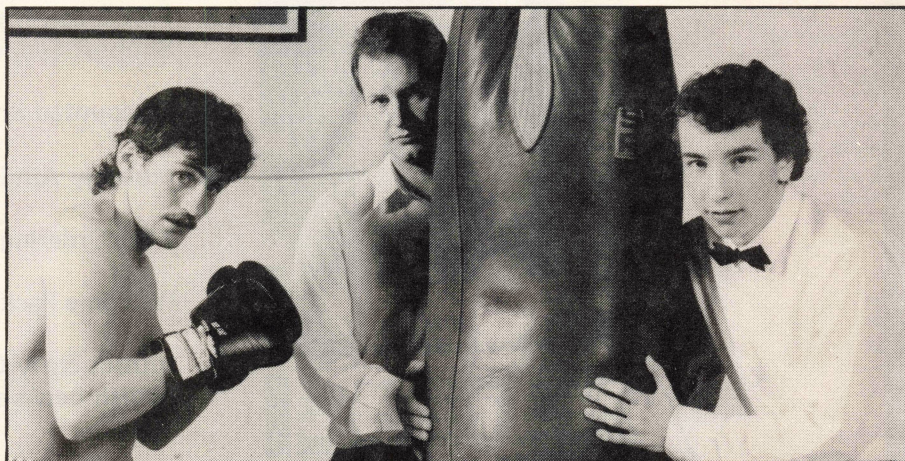
NEW budget releases on the Gamebusters label from Cascade Games (0423 525325) are space flight combat *Ace 2088* and breakout game *Traz* which features a construction kit. Price £2.99 each.

RESPONSE by dealers to the new Amstrad Entertainment Centre has been extremely favourable a company spokesman has told *CPC Computing*.

"The system capitalises on the growing trend for teenagers to spend their free time experimenting with computers, listening to music and watching TV", he said. "The Amstrad

Entertainment Centre combines all three of these activities in one and will allow parents to buy a unit that is an educational tool at the same time".

The system contains a CPC, colour monitor, TV tuner, clock radio, work desk, joystick and 17 games. The CPC464 version costs £399 and the CPC6128 version is £499.



By *Fair Means or Foul* game creators Terry and Michael Simpson meet boxing star Barry McGuigan

Superior seeks a knockout

ONE of the most popular arcade games in the history of UK computing – *Repton* from Superior Software – may soon be available on the CPC.

Acorn specialist Superior (0532 459453) has taken over the Alligata label and acquired the rights to many of its games.

The payoff for CPC users will come from completely new titles under a joint Superior/Alligata label – plus conversions of some of Superior's biggest hits like *Repton* which were written originally for the BBC Micro and Electron market.

"Hardly a week goes by without someone writing to ask when we

are going to make our *Repton* series available on the CPC", said Superior director Steve Hanson.

"This will certainly be one of the conversions we will consider very seriously, but we want to make the new label known for top quality brand original software rather than conversions and re-issues".

First step in this direction is by *Fair Means or Foul*, a boxing simulation which features the opportunity to use illegal methods as well as the Queensberry rules.

Providing the referee doesn't spot you cheating you could end up a world champion. Price £9.95 on tape, £14.95 on disc.

CPC versions of major titles from three of Britain's leading software houses are being prepared by the programming team at Walking Circles. They are 3D space adventure *The Wanderer* for Elite, space flight simulation *Echelon* for US Gold, and *Spitting Image* for Domark. "I expect all three to be on the market before Christmas", said David Llewellyn of Walking Circles. "We have in fact just completed *The Wanderer* and the other two are in their final stages. *The Wanderer* and *Echelon* are conversions from existing formats while *Spitting Image* has been written from an original design".

Play the mating game

PHIL LAWSON checks out Camel Micro's Chess

CHESS has been around for thousands of years, and many different computer versions have claimed to be the best on the market. GM Chess doesn't pretend to be the strongest or the quickest, but it offers a good range of features for beginners and more advanced players.

The initial menu offers five selections (shown in Figure 1). The first two are fairly self explanatory, while openings, mid-game and end game options show various pitfalls and tactics to look out for in those parts of the game.

- Play the game
- Rules
- Openings
- Mid-game
- End game

Figure 1: The initial menu

The strength of a chess program isn't only judged by how well it plays, but also by its ability to follow standard openings of which GM Chess has 32. They include the famous Sicilian Defence and Queen's Gambit, and you can force the CPC to follow the moves for any one of them. This gives you an opportunity to practise defending or attacking against these common strategies.

How well does it play? That depends on which of the seven levels you select. Each is harder than the last, while level zero is speed chess, where

the moves must be made within 20 seconds. Failing to do so loses the game.

Level one gives a reasonable game, and only needs a little concentration to win. On level two the program tends to think longer about its moves. This time increases with each level, and level six can take hours per turn.

On several occasions the computer got bogged down in certain areas of the board, completely ignoring the fact that with one move I could achieve checkmate. This only occurred on the lower levels, and is very similar to the oversights made by inexperienced players.

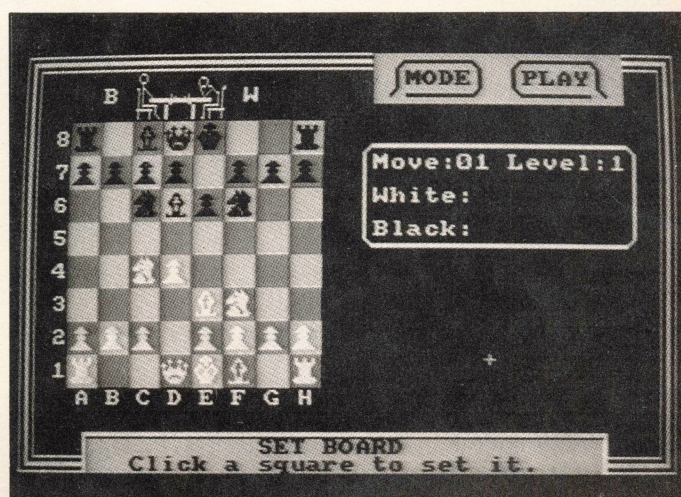
All the standard moves are catered

for, including castling on both sides and capturing en passant, which the computer seemed to take advantage of whenever possible. Should these and other general chess terms be unfamiliar to you, a tutorial section is available by selecting Rules from the main menu.

This gives a complete breakdown on each piece, how it moves and captures, and how it's described using chess notation. Notation is simply a shorthand method for indicating each move, but GM Chess shows the moves in a slightly different form. It first gives the square on which the

Turn to Page 8 ►

You can set up the board in any position, and play from there



◀ From Page 7

piece can be found, followed by its destination square. For instance, the position shown in the picture on the previous page.

1 d2-d4 b8-c6
2 g1-f3 e7-e6
3 c1-e3 g8-f6
4 b1-d2 f8-d6
5 d2-c4 O-O

Table 1: Some simple chess moves

The layout of the board is also discussed, showing the starting positions for every piece, and it is this tutorial section which should make GM Chess appeal to novices.

Since some games can last for many hours, there's a load/save facility to enable you to continue at a later date. This allows you to save the current position before trying risky moves. If things don't work out, or even if they do, you can go back and try a different approach.

Analysing your game in this way is

probably the best way to improve your technique, and it's possible to recap all the moves up to the current position. This is invaluable, especially if you wish to find out where you went wrong. You can even stop the process in order to continue playing at any point.

With such a powerful and useful function, it's a pity it cannot be used when the game has finished. Another bad point is that the only way to get back to the main menu is by resetting the CPC and starting from scratch. This means that if you want to improve your gameplay against several defences, you'll have to reset the computer to try the next one.

Various magazines and daily papers include chess sections where recent games are discussed and problems posed. To allow you to follow them more closely, the board can be set up in any way you wish. You can then play from this position, find a solution to "mate in three" problems, or simply follow the listed moves. If you have a mono monitor, the colours of the squares and pieces can be changed, and printouts of the game moves can be obtained at any time.

Conclusion

This is a good version of chess, challenging and at the same time beatable. When one level can be defeated easily, you simply move on to the next. Although play takes a little longer you should be using this time to study the board and decide on your next couple of moves.

I've outlined a couple of minor bad points, but neither detract from what is a very good game indeed. If you enjoy a game of chess, or you just wish to learn how to play, I can thoroughly recommend it.

Product: GM Chess
Price: £14.95 (disc only)
Supplier: Camel Micros, Wellpark,
Willey's Ave, Exeter, Devon, EX2 8BE
Tel: 0392 211892

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- Six levels of difficulty
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AND AGAINST

- Higher levels take too long

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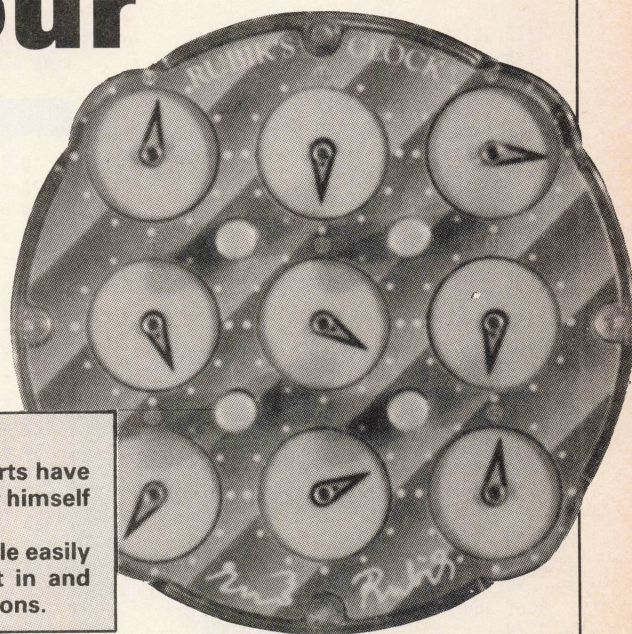
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publishers of inspiration...

Professor, your time is up!

Christopher Stops shows an easy way to beat Rubik's Clock



PROFESSOR Rubik's puzzles, the Cube and Magic, have kept millions of people enthralled for hours. Now another mind-boggling device – Rubik's Clock – has been unleashed on the public. Many people have de-

clared it impossible, and reports have even stated that the professor himself can't crack it.

Now you can solve the puzzle easily with this listing. Just type it in and follow the on-screen instructions.

```

10 REM   Rubik's Clock solver
20 REM   by Christopher Stops
30 REM   Adapted for CPC by Phil Lawson
40 REM   (c) CPC Computing
50 MEMORY 87FFF:MODE 1
60 INK 1,6:INK 2,0:INK 3,24:INK 0,11
70 GOSUB 1560:GOSUB 170:GOSUB 300
80 GOSUB 420:GOSUB 1440:GOSUB 440
90 GOSUB 1100:GOSUB 1440
100 d=8:GOSUB 1210:GOSUB 440
110 FOR M=4 TO 7:d=m:GOSUB 590:NEXT
120 GOSUB 1100:GOSUB 1440:GOSUB 1630
130 FOR M=4 TO 7:d=m:GOSUB 590:NEXT
140 FOR E=0 TO 3:d=e:GOSUB 840:NEXT
150 GOSUB 1080
160 PEN 2:PAPER 1:LOCATE 1,10:END
170 REM initialise
180 RESTORE 200:FOR a=0 TO 8
190 READ dx(a),dy(a):NEXT
200 DATA 216,328,568,328,568,72
210 DATA 216,72,392,328,568,200
220 DATA 392,72,216,200,392,200
230 FOR a=0 TO 3:READ bx(a),by(a):NEXT
240 DATA 304,264,480,264,480,136,304,136
250 FOR r=0 TO 8:READ d$(R):NEXT
260 SYMBOL 240,24,24,60,60,126,126,24,24
270 SYMBOL 241,24,24,24,24,24,24,24,24
280 RETURN
290 DATA "top left","top right","botto
m right","bottom left","top middle","
middle right","bottom middle","middle
left","central"
300 REM drawscreen
310 WINDOW #1,10,40,1,25:PAPER #1,2
320 CLS #1:WINDOW #2,1,9,1,25:PAPER #2,1
330 CLS #2:PEN #2,2:PEN #1,1:PAPER #1,0
340 PLOT 1000,1000,0:FOR C=0 TO 8
350 x=dx(C):y=dy(C):r=54
360 GOSUB 1400:NEXT
370 PLOT 1000,1000,3:FOR B=0 TO 3
380 r=32:x=bx(B):y=by(B)
390 GOSUB 1400:NEXT:PLOT 1000,1000,1
400 TAG #1:MOVE 300,398:p=2:GOSUB 1600
410 PRINT #1,"RUBIK'S CLOCK";:RETURN
420 REM start
430 t$="Hold the puzzle with either face
up in front of you.":GOSUB 1340:RETURN
440 REM solve_central
450 d=8:GOSUB 1480
460 IF ok=-1 THEN GOSUB 490
470 d=8:GOSUB 1210
480 RETURN

```

```

490 REM solve_central_2
500 d=8:GOSUB 1170:GOSUB 560
510 d=0:GOSUB 1270
520 t$="Set all buttons up, then turn th
e "+d$(0)+"dial until the "+d$(8)+"dial
points to 12.":GOSUB 1340
530 GOSUB 1440:GOSUB 560:d=0
540 GOSUB 1270:d=8:GOSUB 1170:tt=0
550 GOSUB 1670:RETURN
560 REM all_up
570 FOR B=0 TO 3:up=-1:GOSUB 1300
580 NEXT:RETURN
590 REM solve_middle
600 GOSUB 1480:IF ok THEN GOSUB 620
610 GOSUB 1210:RETURN
620 REM solve_middle_2
630 GOSUB 1170:b=d:GOSUB 790
640 up=-1:b=d:GOSUB 1300
650 d=d+3:GOSUB 1270:d=d-3
660 t$="Set buttons as shown, then turn
the "+d$((D+3) MOD 4)+"dial until the "+
d$(D)+"dial points to 12.":GOSUB 1340
670 GOSUB 1440:tt=d+3:GOSUB 1670
680 d=d+3:GOSUB 1270:d=d-3
690 t$="Change the "+d$(D MOD 4)+"button
to be down.":GOSUB 1340
700 b=d:up=-1:GOSUB 1300
710 b=d:up=0:GOSUB 1300
720 GOSUB 1440:tt=d+3:GOSUB 1670
730 d=d+3:GOSUB 1270:d=d-3
740 t$="Now turn the "+d$((D+3) MOD 4)+"
dial until the "+d$(8)+"dial points to 1
2.":GOSUB 1340
750 GOSUB 1440:tt=d+3:GOSUB 1670
760 b=d:GOSUB 790:b=d:up=0
770 GOSUB 1300:d=d+3:GOSUB 1270:d=d-3
780 GOSUB 1170:tt=d+3:GOSUB 1670:RETURN
790 REM set_middle_buttons
800 b=b+3:up=-1:GOSUB 1300:b=b-3
810 b=b+1:up=0:GOSUB 1300:b=b-1
820 b=b+2:up=0:GOSUB 1300:b=b-2
830 RETURN
840 REM solve_edge
850 GOSUB 1480:IF ok THEN GOSUB 870
860 GOSUB 1210:RETURN
870 REM solve_edge_2
880 GOSUB 560:GOSUB 1170:GOSUB 1030
890 b=d:up=-1:GOSUB 1300
900 d=d+3:GOSUB 1270:d=d-3
910 t$="Set the buttons as shown, and tu
rn the "+d$((D+3) MOD 4)+"dial until the

```

```

"+d$(D)+"dial points to 12.":GOSUB 1340
920 GOSUB 1440:tt=d+3:GOSUB 1670
930 d=d+3:GOSUB 1270:d=d-3
940 t$="Change the "+d$(D)+"button to be
down.":GOSUB 1340
950 b=d:up=-1:GOSUB 1300:b=d
960 up=0:GOSUB 1300:GOSUB 1440:tt=d+3
970 GOSUB 1670:d=d+3:GOSUB 1270:d=d-3
980 t$="Now turn the "+d$((D+3) MOD 4)+"
dial until the "+d$(8)+"dial points to 1
2.":GOSUB 1340
990 GOSUB 1440:tt=d+3:GOSUB 1670:b=d
1000 GOSUB 1030:b=d:up=0:GOSUB 1300
1010 d=d+3:GOSUB 1270:d=d-3:GOSUB 1170
1020 tt=d+3:GOSUB 1670:RETURN
1030 REM set_edge_buttons
1040 b=b+1:up=-1:GOSUB 1300:b=b-1
1050 b=b+2:up=-1:GOSUB 1300:b=b-2
1060 b=b+3:up=-1:GOSUB 1300:b=b-3
1070 RETURN
1080 REM done
1090 t$="You have now solved Rubik's Clo
ck!":GOSUB 1340:RETURN
1100 REM turn_over
1110 t$="Now turn the puzzle over to the
other side.":GOSUB 1340:RETURN
1120 REM ok
1130 TAG #1:MOVE dx(d)-8,dy(d)+48:p=0
1140 GOSUB 1600:GOSUB 1610
1150 MOVE dx(d)-32,dy(d)+8:GOSUB 1600
1160 PRINT #1,"OK ? ";:TAGOFF #1:RETURN
1170 REM solving
1180 TAG #1:MOVE dx(d)-40,dy(d)+8:p=0
1190 GOSUB 1600:PRINT #1,"DOING";
1200 TAGOFF #1:RETURN
1210 REM solved
1220 TAG #1:MOVE dx(d)-8,dy(d)+48:p=0
1230 GOSUB 1600:PRINT #1,CHR$(240);
1240 MOVE dx(d)-8,dy(d)+32:PRINT #1,CHR$
(241);
1250 MOVE dx(d)-44,dy(d)+8
1260 PRINT #1," DONE ";:TAGOFF #1:RETURN
1270 REM turn
1280 TAG #1:MOVE dx(D MOD 4)-32,dy(D MOD
4)-16:p=0:GOSUB 1600
1290 PRINT #1,"TURN";:TAGOFF #2:RETURN
1300 REM set_but
1310 TAG #1:MOVE bx(B MOD 4)-8,by(B MOD
4)+8:p=3:GOSUB 1600
1320 IF up THEN PRINT #1,"U"; ELSE PRINT

```

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```
#1,"D";
1330 RETURN
1340 REM print message
1350 P=INSTR(TS,""):WHILE p<>0
1360 PRINT #2,LEFT$(TS,p-1)
1370 TS=RIGHT$(TS,LEN(TS)-P)
1380 P=INSTR(TS,""):WEND
1390 PRINT #2,TS:RETURN
1400 REM draw circle
1410 FOR S=-R TO R STEP 2
1420 Z=SQR(R*R-S*S):PLOT X+S,Y+Z
1430 DRAW X+S,Y-Z:NEXT:RETURN
1440 REM wait
1450 PRINT #2
1460 t$="Any key to cont...":GOSUB 1340
1470 WHILE INKEY$="":WEND:CLS #2:RETURN
1480 REM ask_dial
1490 t$="Is the "+d$(D)+"dial at 12?"
1500 GOSUB 1340:GOSUB 1120:GOSUB 1540
1510 ok=1:i$=UPPER$(INKEY$):IF i$="Y" TH
EN ok=0 ELSE IF i$="N" THEN ok=-1
1520 IF ok=1 THEN 1510
1530 CLS #2:RETURN
1540 REM delay
1550 FOR ti=1 TO 1000:NEXT:RETURN
1560 addr=&8000:RESTORE 1590
1570 FOR a=1 TO 6:READ x:POKE addr,x
1580 addr=addr+1:NEXT:RETURN
1590 DATA &3E,&800,&CD,&E4,&BB,&C9
1600 POKE &8001,p:CALL &8000:RETURN
1610 PRINT #1,"";
1620 MOVE dx(d)-8,dy(d)+32:PRINT #1,"";
:RETURN
1630 TAG #1:p=0:GOSUB 1600:FOR f=4 TO 7
1640 MOVE dx(f)-8,dy(f)+32:PRINT #1,"";
1650 MOVE dx(f)-8,dy(f)+48:PRINT #1,"";
```

```
1660 MOVE dx(f)-28,dy(f)+8:PRINT #1,"
";:NEXT:TAGOFF #1:RETURN
1670 REM turn
1680 TAG #1:MOVE dx(tt MOD 4)-32,dy(tt M
OD 4)-16:p=0:GOSUB 1600
1690 PRINT #1,"";:TAGOFF #1:RETURN
```



LINE	CHSUM	LINE	CHSUM	LINE	CHSUM	LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	= 14528	300	= 15648	590	= 54688	880	= 44160	1170	= 46912	1460	= 26976
20	= 13728	310	= 37056	600	= 01728	890	= 55808	1180	= 62112	1470	= 57600
30	= 59904	320	= 00192	610	= 40736	900	= 39616	1190	= 35840	1480	= 00288
40	= 52736	330	= 50048	620	= 64992	910	= 60864	1200	= 34944	1490	= 44864
50	= 07872	340	= 64544	630	= 26176	920	= 39520	1210	= 12768	1500	= 60352
60	= 20992	350	= 22880	640	= 59008	930	= 39616	1220	= 39776	1510	= 19328
70	= 24000	360	= 44832	650	= 39616	940	= 15680	1230	= 06976	1520	= 16736
80	= 05632	370	= 57920	660	= 25344	950	= 53248	1240	= 26976	1530	= 26272
90	= 54528	380	= 19488	670	= 39520	960	= 53728	1250	= 02752	1540	= 20096
100	= 54816	390	= 39392	680	= 39616	970	= 06208	1260	= 04192	1550	= 57600
110	= 39872	400	= 44000	690	= 36576	980	= 16352	1270	= 36096	1560	= 58560
120	= 58208	410	= 32288	700	= 55808	990	= 35584	1280	= 41152	1570	= 63904
130	= 39872	420	= 49824	710	= 46080	1000	= 45312	1290	= 62208	1580	= 41504
140	= 05216	430	= 19456	720	= 39520	1010	= 64928	1300	= 35456	1590	= 07904
150	= 63808	440	= 63584	730	= 39616	1020	= 21728	1310	= 60256	1600	= 33536
160	= 50080	450	= 62848	740	= 16352	1030	= 47744	1320	= 50848	1610	= 22912
170	= 42400	460	= 26880	750	= 39520	1040	= 56576	1330	= 27008	1620	= 51968
180	= 11744	470	= 01248	760	= 15712	1050	= 16480	1340	= 29760	1630	= 62560
190	= 30432	480	= 27008	770	= 49120	1060	= 06784	1350	= 49888	1640	= 50144
200	= 45440	490	= 31520	780	= 60736	1070	= 27008	1360	= 43648	1650	= 60704
210	= 33984	500	= 15872	790	= 48832	1080	= 20512	1370	= 14528	1660	= 27520
220	= 23200	510	= 36448	800	= 06784	1090	= 64352	1380	= 11200	1670	= 36096
230	= 23264	520	= 48832	810	= 51168	1100	= 16960	1390	= 34272	1680	= 64928
240	= 29536	530	= 28704	820	= 17568	1110	= 27712	1400	= 46080	1690	= 23424
250	= 44832	540	= 38912	830	= 27008	1120	= 53600	1410	= 18976		
260	= 32544	550	= 65184	840	= 18272	1130	= 39776	1420	= 42016		
270	= 57504	560	= 64992	850	= 63872	1140	= 41888	1430	= 04320		
280	= 27008	570	= 40704	860	= 40736	1150	= 36224	1440	= 53536		
290	= 37472	580	= 42880	870	= 49472	1160	= 40416	1450	= 15552		



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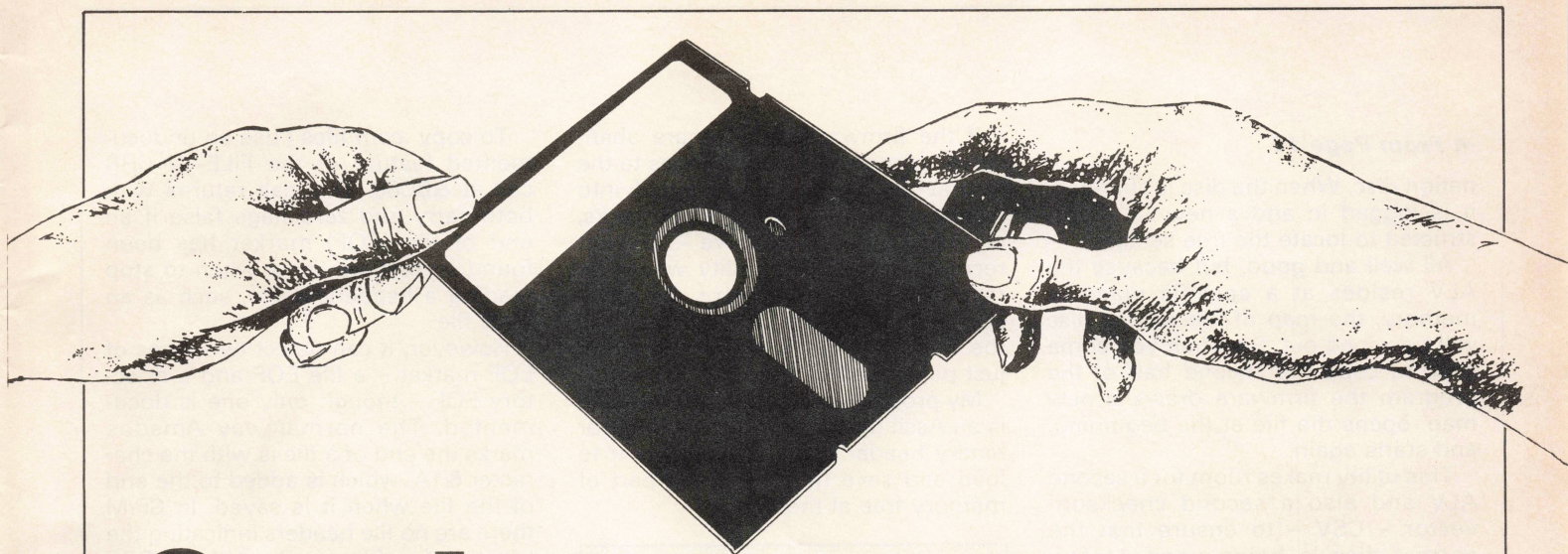
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Get into the transfer market

Avoid all those file copying blues, courtesy of DAVE INSTONE-BREWER

ALL disc drive owners will know the difficulties associated with copying files between discs. PIP, the CP/M utility, is very tedious when you only have one drive, and the other routines copy the whole disc, not individual files. However, these problems are now a thing of the past.

This utility has been designed to work with any setup which obeys the rules of Amsdos. It is certainly compatible with the new KDS 5.25in drive and should work with any drive with up to &800k capacity and 256 directory entries.

Filecopy can transfer any files normally associated with Amsdos or CP/M. It will copy Basic, binary and Ascii files of any length from one disc to another, even on different drives, including 5.25in. As it only makes use of available ram, programs currently in memory will not be corrupted.

Type the program in, save and run it. This will poke the machine code into the highest area of free memory, and then save it as *copy.&a2*. HIMEM is set, and the new command **I COPY** is initialised.

The &A2 – or some other number –

I COPY,"file"	From one disc to another.
I COPY,"file>B"	From the current drive to drive B.
I COPY,"A:file>B"	From drive A to drive B.
I KOPY	An alternative version of I COPY. Provided in case another RSX of the same name is present.

● CPC464 owners will need to put the parameters in a string variable, for example:

```
a$="file"
I COPY,@a$
```

in the filename indicates the start address of the code, which is &A200 in this example. This will vary according to the value of HIMEM when the program was run, and is included so that the code can be installed quickly on future occasions. All you need is a simple loader such as:

```
10 MEMORY &A1FF
20 LOAD"copy.&a2"
30 CALL &A200
```

Table I shows the four command formats. If the file won't fit into memory, it will be copied in smaller sections. Therefore copying may be quicker if other programs are not loaded.

Filecopy's ease of use and the simplicity of its syntax disguise the fact that copying files under Amsdos is difficult. The firmware assumes that Basic or binary files being saved are loaded in their correct positions in memory, which means that programs being copied would be likely to overwrite any program already in the computer.

How it's done

The firmware also demands that only one disc is used in a drive at any one time. Files opened on a disc are automatically closed when another disc is used in the same drive, so files which are too large to fit into the CPC's memory cannot be copied easily.

These restrictions concerning the use of one disc are due to the fact that Amsdos makes a map of the disc's space usage. Called the allocation vector, or ALV, it is regularly examined in order to find out where files are and which parts of the disc are free.

Before the firmware begins writing to a disc it checks to see which one is in the drive. This is so that it doesn't overwrite any sectors which were free on the source disc, but which may contain a valuable data on the desti-

Table I: The four new commands

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nation disc. When the disc is changed, it is logged in and a new ALV constructed to locate the free sectors.

All well and good, but because the ALV resides at a specific place in memory, the map of the source disc will be wiped out. So when you come back to copy the second half of the program the firmware draws a new map, opens the file at the beginning, and starts again.

This utility makes room for a second ALV and also a second checksum vector – CSV – to ensure that the correct disc is being used. Unfortunately this still doesn't stop the firmware throwing a wobbler and closing any open files when a different disc is inserted. Therefore, files in danger of being closed are temporarily allocated to another drive where the firmware is more than happy to ignore them. This drive transfer is only theoretical, and it doesn't matter whether or not a second drive is fitted.

If the firmware routines are abandoned completely, any changes to the format which has been logged into Amsdos – such as using extra tracks, or fitting a 5.25in B drive – are not recognised, and the utility would be restricted to normal setups. As many people have something non-standard, the firmware has not been ignored, just persuaded to cooperate.

My program pretends that every file is an Ascii file, and writes the Basic or binary header itself. This allows it to load and save files from any part of memory free at the time.

Problems with CP/M

Copying CP/M files presents its own problems. The only way you can tell the length of a file is from its directory entry, which maps out the disc sectors the file occupies. Therefore with a CP/M file the FILE-IN-CHAR call goes on reading characters until it runs out of sectors in the directory entry, and then returns with carry and zero false.

To copy .com files I use an undocumented feature of the FILE-IN-CHR call at &BC80. This call returns with both carry and zero flags false if an end of file (EOF) marker has been found so that we know when to stop reading a headerless file, such as an Ascii file.

However, it can detect two types of EOF marker – a file EOF and a directory EOF – though only one is documented. The normal way Amsdos marks the end of a file is with the character &1A, which is added to the end of the file when it is saved. In CP/M there are no file headers indicating the length of a file, nor are there EOF markers within files.

The first type of EOF – the file EOF – can be distinguished from the directory EOF by the value in the A register, which is &1A for the file EOF and &0F for the directory EOF.

It is a mystery why Amstrad did not provide this type of utility with the CPC. Once you start using it you will wonder how you ever managed your disc housekeeping without it.

Disc file copier program

```
10 REM   Disc File Copier
20 REM by Dave Instone Brewer
30 REM   (c)   CPC Computing
40 REM   -----
50 PRINT:PRINT"Poking machine code"
60 m=INT((HIMEM-8500)/8100)
70 MEMORY (m*8100)-1:mem=m*8100:n=mem
80 e=200:RESTORE 200
90 sum=0:READ a$:IF a$="X" THEN 170
100 FOR x=0 TO 9:b$=MID$(a$,1+x*2,2)
110 IF LEFT$(b$,1)="M" THEN b=VAL(RIG
HT$(b$,1)):sum=sum+80+b:a=m+b:GOTO 1
30
120 a=VAL("&b$"):sum=sum+a
130 POKE n,a:n=n+1:NEXT
140 b$=MID$(a$,1+x*2,3)
150 IF sum<>VAL("&b$") THEN PRINT"Da
ta error in line "e:END
160 e=e+10:GOTO 90
170 f$="COPY.&"+HEX$(m)
180 SAVE f$,b,mem,&380
190 CALL mem
200 DATA 010A00211B00C3D1BCC9460
210 DATA 12M0C31FM0C31FM0434F3E8
220 DATA 50D94B4F50D9000000002EC
230 DATA 00FD215DM4A7CAE7M2FD5D6
240 DATA 7E00E6CFFD7700CD7ABC5AA
250 DATA CD8FBCCDDM42A71B0ED5AE
260 DATA 5B6CAEA720072A8DB0ED497
270 DATA 5B89AE010008A7ED4D5446
280 DATA E5214EAC06103600231027F
290 DATA FBDD6E00DD660106004E3DE
300 DATA C5235E2356EB114EAC233D8
310 DATA 7E2BFE3A28021313EDB03CE
320 DATA C1412A7D0E7EC6414F2145C
330 DATA 4FAC7EFE3A2806363A2B37A
340 DATA 7104043A4EAC4FFDCB003C4
350 DATA E6EB2B27FE3E20173644E
360 DATA 000505234E3A4EACCBF369
370 DATA B92809CBAFB92804FDCB511
380 DATA 00A6214EACD1D5C5CD77570
390 DATA BCD22DM3E5DDE12A7DBE646
400 DATA 110A00191150AC01080014A
```

```
410 DATA EDB0EB362EEB130103003EE
420 DATA EDB03E001114001977112A1
430 DATA 3F0019772377112D00191C0
440 DATA 77233680C1063AED434E3CF
450 DATA ACE1110008A7ED52224C3FA
460 DATA ACFDCB0066C4B0M22BD15CC
470 DATA ED52010008973CED423037A
480 DATA FB3DCA13M3EB57CD39M1561
490 DATA CD8FBCD297M3CD7DBCCD6D7
500 DATA 92BC2154ACFD0CB0066C8555
510 DATA C3A5M21E10E5D51E10CD4CD
520 DATA 80BC3804FE0F28227723369
530 DATA 067FCD80BC772310F91D44E
540 DATA 20E91520E401E1E5D5CD65B
550 DATA 76M1CDB3M1CDDFM1D1E16D7
560 DATA 18CFD5C07ABCD24FM3D1634
570 DATA F19257E1E5D5CD07M2FD6C8
580 DATA CB006ECC8M13A48M4FE552
590 DATA 44C0D1E13E10935A1600407
600 DATA EB29292929CD01M4EB7A446
610 DATA B3C87E23CD95BCD2BEM364D
620 DATA 067F7E23CD95BC10F91B468
630 DATA 7AB320EAC921C7M1CDD460A
640 DATA BC793202BF217AC822003AD
650 DATA BFD00BFC985FDCB00EE661
660 DATA 00E214EACED5B4CADD44C
670 DATA E5CD8CBCD271M3E1C9FD767
680 DATA CB0066C8CD26M40A0D0738E
690 DATA 49E73657274207468653D6
700 DATA 2020534F55524345FF21331
710 DATA 44AC0101003E001826FD20B
720 DATA CB0066C8CD26M40A0D0738E
730 DATA 49E736572742044553371
740 DATA 54494E4154494F4EFF21386
750 DATA 48AC0100013EFF325DBE380
760 DATA E5CD26M420646973632043F
770 DATA 616E46207072657373203A0
780 DATA 61206B6579FFCD18BFF567
790 DATA FCCAEBM32A7DBE7EA7285E6
800 DATA 0378414F110800197FE2B9
810 DATA 02300170112400197FE26D
820 DATA 02300171DD2A40BD06E3F4
830 DATA 0ADD660BE5116EAC011637F
840 DATA 00EDB0DD6E1ADD661BD1531
850 DATA E5011600EDB0D1216EAC4A5
860 DATA 011600EDB0E1CDA52CD556
```

```
870 DATA 26M40D120BFFC9E5CDD151F
880 DATA M2010400E1EDB0C9114041F
890 DATA 00A7ED522248AC112D0033A
900 DATA A7ED52224AAC5CDD1M2603
910 DATA EB1144AC010400EDB0E146F
920 DATA C92A70B7E7E010000A72837C
930 DATA 020E102A40BE09110C0016E
940 DATA 19EBC9CD26M47C434F50A2
950 DATA 592C2246494C453E4122268
960 DATA 20636F7069657320A783F52
970 DATA 4C4520746F2064726976369
980 DATA 652041FFC336M4CD26M44B9
990 DATA 0A0D46F7420656E6F7531F
1000 DATA 676820726F6F6D2E20FF3F9
1010 DATA C3EBM3CD26M40A0D4361463
1020 DATA 6E6E6F7420F70656E203B1
1030 DATA 736F757263652066696C3EC
1040 DATA 652E20FFC3EBM3CD26M455A
1050 DATA 0A0D43616E6E6F7420632FD
1060 DATA 6C6F736520736F7572633FF
1070 DATA 652066696C652E20FF1838A
1080 DATA 7ACD26M40A0D43616E6E6F7432A
1090 DATA 6F74206F70656E20646539E
1100 DATA 7374696E6E174696F6E203F9
1110 DATA 66696C652E20FF1854CD426
1120 DATA 26M40A0D43616E6E6F7432A
1130 DATA 20636C6F736520646573392
1140 DATA 74696E6174696F6E20663EC
1150 DATA 696C652E20FF182DCD263BF
1160 DATA M40A0D43616E6E6F742031E
1170 DATA 77726974652066696C653EB
1180 DATA 2E20FF1812CD26M40A0D305
1190 DATA 436F7079204572726F723C5
1200 DATA 2E20FFCD26M40A0D416237E
1210 DATA 6F727465642E0A0DFFCD42F
1220 DATA 28M1C336M4856FD024C94D7
1230 DATA F57E23666FF1C91100BF4F5
1240 DATA 211DM4010900EDB0E00277
1250 DATA C300BFCDD0FB93A02C0C34D6
1260 DATA 18B9E3F57E233C2806D3D3F1
1270 DATA CD5ABB18F5F1E3C931F66B3
1280 DATA BF3E07C35ABB7C434F5043A
1290 DATA 592C20627920442E496E2C9
1300 DATA 73746F6E6520427265773D9
1310 DATA 657220313938380000001D1
1320 DATA X
```


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C
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Far from over...

*Game Over II, Dinamic
£9.99 tape, £14.95 disc
Joystick and keys*

SOME time back I reviewed the original version of *Game Over*. This story of galactic power struggles between the beautiful but evil Gremla and the heroic Arkos was rightly given an award. I now have in my possession *Game Over II*, and I'm pleased to say that is even more impressive than its predecessor.

Quality was obviously the aim

when Dinamic put the package together. The artwork on the box and free poster are immaculate. A touch naughty, but immaculate nonetheless. They have even included the original *Game Over* program on the flip side of the disc.

Game Over II is played in two parts. The first consists of four zones, and if you negotiate these successfully you are provided with a five-digit access code. When you load the second program it will demand this code before allowing you past the title screen.

Game one, zone one, charts your approach to moon number four. This horizontally scrolling extravaganza is in the true tradition of shoot-'em-ups – blast everything in sight, even before it appears on the screen. Alien craft include gold kamikaze ships and small blue fighters which are both agile and vicious.

Zone two is the most difficult. Flying low over the lunar surface you will be rammed from behind, meteored from above, zapped from the front, and finally fried from



below by particularly accurate and ill-timed lava eruptions.

Eventually the action subsides and your ship dives headlong into an underground cavern – zone three. The usual compliment of alien ships is supplemented with a new and novel adversary, the multiplier serpent. This writhing string of sprites can only be destroyed by a volley of three shots to the head.

Low on fuel, you land your craft at the far end of the cavern and mount your transport – a large prehistoric beast – for the swamp crossing. Also devoid of mechanical devices the aliens seek different modes of transport.

Airborne attack is achieved with the assistance of pterodactyls, and hanging from the beast's claws your attacker drops towards you as the reptile flies overhead.

Other swamp dwellers include baddies on foot and superb little characters sat astride giant toads. With no laser for defence you must rely on your skill with the photonic blade – a ball of light which extends and retracts like a yoyo. This device has a very short range, so the enemy has to be engaged at close quarters. Miss, and you're dead.

Game two consists of six different levels. It is completely independent of program one, and your score and lives tally are reset to zero and five respectively.

Set against a mountain backdrop, you are attacked by hordes of bad guys on bouncy rubber space hoppers. Equipped only with a short-jump jet pack you are aided by a rebel space hopper which follows you around killing every alien it touches. By clever use of the jet pack you can leap the on-coming aliens, dragging your lethal buddy through their ranks.

After a short period of jumping



and dragging you reach a hole in the ground which is your doorway to zone two. Leaving your hopper behind, you jump into the unknown, landing right beside a turbo laser. What a stroke of luck!

The hi-tech bunker is patrolled by guards and droids. It also contains a proton loader pack and two extra lives. The only thing that eluded me was the exit to zone three!

Game Over II is a skilful combination of superb graphics and original gameplay. Buy it.

Jon Revis

Presentation 95%

First rate.

Graphics 91%

Colourful, detailed and highly original.

Sound 89%

A cracking title tune and good sound effects.

Playability 91%

A good spread of sections from easy to difficult.

Addictiveness 90%

The ability to go straight to game two is a welcome feature.

Value 93%

Especially so with the inclusion of Game Over I.

OVERALL 92%

An essential addition to any gameplayer's collection.



Love's labour lost

Hercules – Slayer of the Damned, Gremlin

£9.99 tape, £14.99 disc

Joystick only

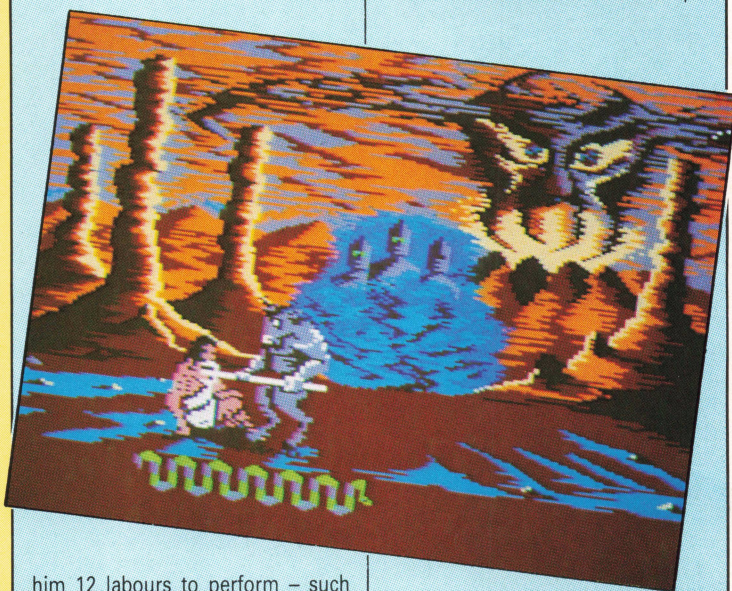
HERE'S a game of mixed mythologies – Hercules is the Roman name given to the Greek hero Heracles. But let's not get involved in all that. Suffice it to say that Hercules was a victim of circumstance and his father's hanky panky.

So the gods sent him to the spiteful King Eurystheus who gave

is that you can never tell when you connect with something. Several times I managed to bring the skeleton to its patella and whack it soundly across the sternum and cranium, but if you think it's going to go down you're labouring under a misapprehension.

Nor is there anything to show the relative strengths of the protagonists, although when you're winning the snake shrinks. You know you've had enough when you fall down dead. When/if you collect all 12 labours you meet the Minotaur.

Nice idea but what on earth hap-



him 12 labours to perform – such everyday feats of heroism as slaying the Hydra and the terrible lion of Nemea, and swabbing out the Augean stables which hadn't been cleaned for 30 years.

The labours are graphically represented on the screen and you must hit them to collect them, which is a bit of a cop out. Watch out for the spider which drops down from the sky to try to pinch them. By hitting it you can fend it off.

You are armed with a club and you have your fists and feet, but what happened to the helmet, sword, shield and bow and arrow given to Hercules by the gods?

Anyway, that bit's easy. The trouble is, you have to fight off a skeleton at the same time. The joystick is used to trigger karate-like chops with names such as Mountain Shaker, Punch of Death and Zeus' Torment.

The fighting's weird. A snake moves back and forth across the bottom of the screen and you can only inflict damage on your enemy when he's over it. Lots of toing and froing going on.

The problem with all this fighting

pened between concept and implementation? There's many a slip 'tween cup and Styx I suppose. And I'm still waiting for the Damned to make an appearance. Weren't they a pop group?

Ian Waugh

Presentation 62%

No hi-score but there's a Pause option and you can turn the music off leaving the sound effects.

Graphics 65%

Big graphics, big sprites, but Hercules walks duck-toed.

Sound 90%

Good use of the sound chip.

Playability 48%

Rather too labour-intensive for me.

Addictiveness 30%

Doesn't have much – any? – gameplay.

Value 42%

Large-scale aspirations which don't really come off.

OVERALL 48%

Not one I'd spend my pocket money on.

THE GAMES



Snow good at all

*The Games – Winter Edition, Epyx
£9.99 tape, £14.99 disc
Joystick and keys*

NOT content with the success of its Olympic mega-compilation – Gold Silver Bronze – Epyx has now released a seven-event winter variation.

That most frightening but exhilarating of alpine events – the luge – is

your first challenge. I was expecting the usual view from behind the sled, but was disappointed with the Epyx's choice of a series of sections, viewed from above, across which the sled slides. Worst of all, the event was completed in absolute silence.

Cross-country skiing was never the most gripping of computer sports, but this version is the worst I've seen. Joystick wagging provides the motive power, but uphill and downhill sections are



Get in your sled for the luge

indicated by the direction in which the skier's skis are pointing. I suppose a change in the background was too much to expect.

Tedium is the name of the game in the next event – figure skating. Select one of three pieces of music and then assemble a sequence of 14 dance moves to go with it. This complete, the music is replayed and you must execute your dance steps in time with the music – Yaaaaawn!

At last, a playable event. Looking through the competitor's eyes you speed down the ramp of the 90 metre ski jump. Steering left and right you maintain a straight course, then hit the fire button to launch yourself into the air. Changing to a side view, you must fly with grace and balance until it is time to touch down. Nice game but still no sound.

It's back to basics with the slalom event – a pair of red and blue sprites avoid little black flags as they move diagonally across the screen. No expense spared, eh?

Single-colour sprites are the order of the day once again, but this time they're competing in the speed skating event. Two "action" windows in the middle of the screen show the competitors' skating movements. The circuit is repre-

sented by a large oval around which two numbers move. Good skating animation is the event's only redeeming feature.

A skier's eyeview is the perspective employed for the downhill event. Pick your way between the course markers – simple black rectangles – as you race to the bottom.

If you want an Olympic compilation, I strongly recommend that you save your money and buy Gold Silver Bronze.

Carol Barrow

Presentation 80%

It's a pity the program isn't as good as the instructions.

Graphics 59%

Varied but poor.

Sound 38%

Obviously Epyx prefer the minimalist approach.

Playability 56%

Ranges from adequate to abysmal.

Addictiveness 30%

There wasn't one event I would have played more than twice.

Value 29%

Definitely not.

OVERALL 51%

You have been warned!



Cross country skiing

Save New York

Sabian Island, Skyslip Software
£9.95 tape, £14.95 disc
Joystick and/or keys

THE evil Dr. Q has planted an atomic bomb in New York and your task is to defuse it. However this requires a timing device which has been dismantled and the pieces scattered on a Pacific island.

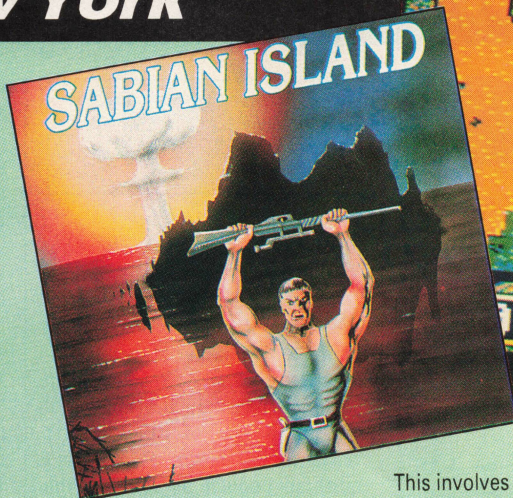
You must collect all 15 parts of the timer and reassemble it, but if you don't succeed within six hours New York will be mushroomed. This plot, in fact, conceals a blast everything that moves game.

You a, bare-armed Ramboesque figure, see an overhead view of part of the island. There are also panels showing which section of the island you are exploring and which bits of the timer you have found.

As you fight your way around you find extra guns and grenades which are displayed with your score, while in the screen's top right corner is a digital countdown.

Your character only moves forward, but can be rotated to face in the desired direction. Control is difficult to master and since you only shoot forwards, is probably the hardest part of the game... well almost.

As you progress you encounter



minefields, mazes, dark areas, tanks, and hordes of enemy troops. Among all this are glowing question marks which are the timer fragments you must collect.

Here an annoying quirk appears: Once past an island section you can't backtrack, so that moving too quickly can result in pieces being left behind. Additionally, the map panel is highlighted according to your current position but doesn't appear to correspond to the directions you take.

During this collection stage the game can be paused, but once all the pieces are gathered this feature doesn't work and you face the most difficult task with no time to think.



This involves a horrendously difficult sliding tile puzzle. As you frantically waggle the joystick trying to make some sense of the lines and blobs of colour, you curse the authorities for forgetting to give you a diagram showing how the timer should look when completed.

The graphics are colourful and clear, but movement of the large sprites is rather jerky. This, coupled with somewhat imprecise controls, makes accurate movement a nightmare.

Sound is rather limited – mainly spot effects with a sort of wail when you are killed. One consolation is that when you die you restart from the same spot rather than being put back to the beginning.

Sabian Island tries to combine two

different concepts – shooting and thinking – and doesn't seem to have achieved either well. Perhaps future releases will concentrate more on playability.

Pat Winstanley

Presentation 65%

Rather confusing.

Graphics 70%

Clear and colourful, but scrolling and sprite movement are jerky.

Sound 60%

Adequate, but not wonderful.

Addictiveness 55%

Lack of playability spoils a good idea.

Value 50%

This is really budget standard.

OVERALL 60%

Too much unnecessary frustration.

Battle for Midway

1943, Capcom/US Gold
£9.95 tape, £14.95 disc
Joystick or keys

THIS arcade conversion takes you back more than 40 years to the west coast of the Midway Islands, where the Japanese forces suffered some of their biggest war losses.

Is Japan the superior nation? Sat at the controls of an American P38 warplane you relive the action as you try to devastate the battleship Yamato.

You are no sooner airborne than you are subjected to hostile fire from hundreds of fighters flying at you from the top of the screen. If the going gets too tough, a barrel roll will save you from being shot down. Don't rely on this manoeuvre too much though, as you can only manage four.

As you progress slowly towards the Yamato, Red Arrow-like planes will occasionally appear from random parts of the screen. If you

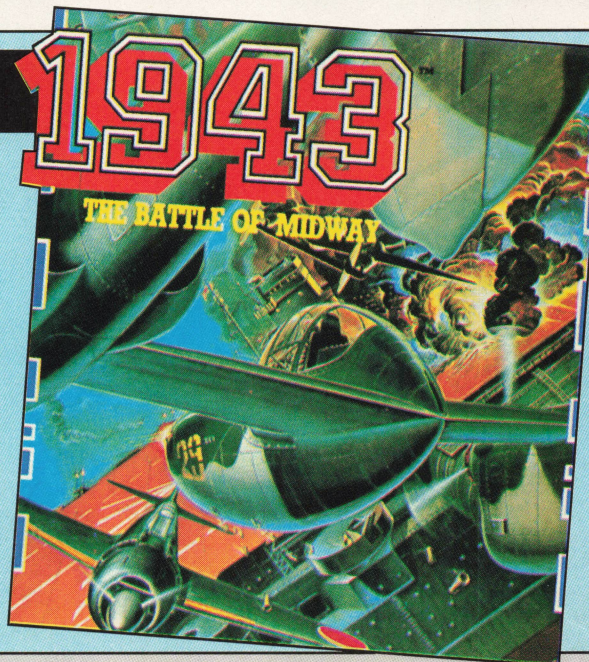
shoot them all down the word Pow will pop up, and if you fly over it your fuel tanks will be replenished. If the Pow is shot at, however, it will change between six types of weapon such as multi-directional fire or my favourite – allied fighters at your wingtips.

Once you have seen off all the small planes you should have visual contact with Yamato. First you must attack smaller boats escorting the ship before going for the kill. As you approach her you will see all her guns swivel in your direction.

If you thought that confronting Yamato sounded a touch difficult, I would advise you to eject now. It has been confirmed that a massive plane – similar in shape to the American B17 Flying Fortress – is in the area. You should aim at the four propellers, which burst into flame when hit.

I've played the 1943 arcade machine a fair bit, but even taking this into account I found the CPC conversion far too easy.

John Butters



Presentation 90%

User-defined keys, high score table, and two-player option.

Graphics 85%

Smooth scrolling, colourful, and clear.

Sound 20%

Why did they bother?

Playability 90%

No problems here.

Addictiveness 40%

Needs to be more difficult.

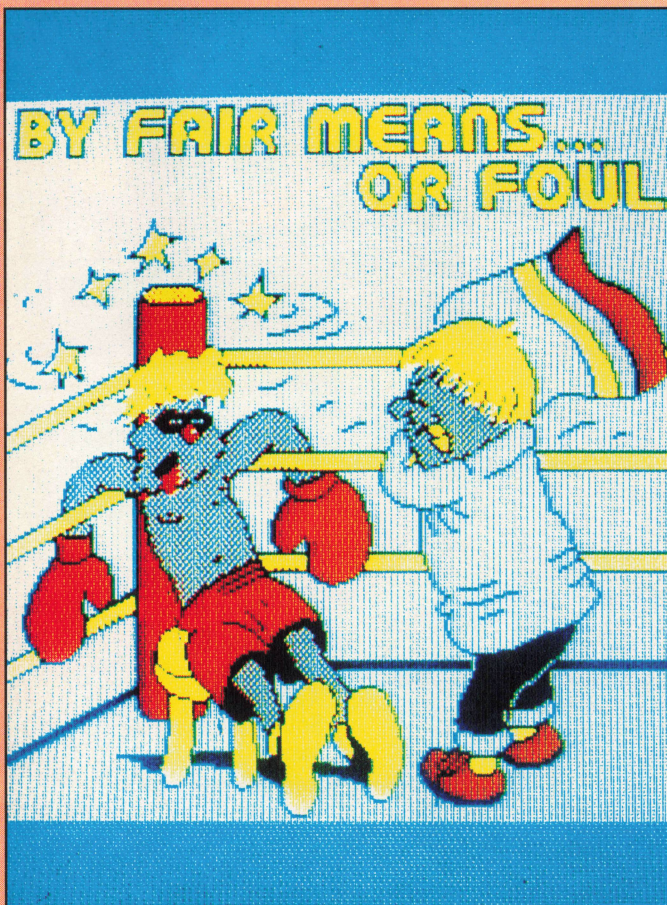
Value 50%

Average game at an average price.

OVERALL 60%

Just too easy.

A game with PUNCH!



By Fair Means or Foul, Superior Software
£9.95 tape, £14.95 disc
Joystick or keys

SPORTS simulations, whether they be football, snooker, Olympics or martial arts, seem to be the one type of game which never dates. Computerised boxing, however, doesn't seem to have had the impact or staying power of other sports scenarios. But then in real life it isn't quite so popular as some of the others.

By Fair Means or Foul is not for the boxing purist because, as the title suggests, you can cheat. Not very ethical, but if what I see on the telly is anything to go by, it does add a certain air of realism.

At the centre of the screen are the two opponents and the traditionally-dressed referee, hands on hips. You start with the Junior Championship and from there you can only go up. The outlines of both competitors are shown above their corners, the number in their centres representing the lives remaining from the initial five.

Bouts are 15 rounds long, and to

win you must score more points – shown above your figure on the left – than your opponent, or reduce his energy to nothing. This is represented by a bar at the bottom of the screen, and the original green gradually changes to red as the fighters take blows. It's a knockout when the bar turns solid red.

The shadowy crowd watches every move and applauds on cue. An occasional comment also comes from their direction – "C'mon pansy" and so on. They also jump around at the end of each round. There is not much use of sound apart from this, merely the bell and smack of glove on flesh.

In some ways By Fair Means or Foul is reminiscent of Yie Ar Kung Fu, as some of the illegal moves look very much like those in martial arts games. Sixteen moves are available to you – eight with the fire button depressed and eight without, and you can also block punches.

The cheating aspect adds strategy, and you need cunning to outwit the referee. If you are renowned for fouling, your outline will be red and the ref watches you intently.

An amber outline means that you may get away with some illegal

Four old favourites

Big Screen Hero, Skyslip Software
£9.95 tape, £14.95 disc
Joystick or keys

THIS is a collection of four old games, revamped and tagged with names and characters from classic films. Each game loads separately, and throughout each one the screen is surrounded by a border which gives you the impression of being in the audience.

Clint Bites the Dust casts you as the man himself taking cover behind an overturned waggon in a frantic battle with hordes of Indians who appear in the middle of the screen and move towards you, enlarging in a reasonable simulation of 3D perspective.

Your movements are limited to left and right as you try to avoid hurled tomahawks while shooting the redskins with your inexhaustible gun.

Frankenstein Meets Dr. Jekyll is a Pacman-type game where you play Dr. Jekyll trying to escape from several Frankenstein characters. Eerie music during pill collection

and spine-chilling screams when you are cornered make this an atmospheric little number.

The Sawmill Massacre casts you in the role of heroic saviour. In the background a struggling girl is tied to a conveyor belt which inches inexorably towards a spinning and toothsome saw blade. On the right of the screen is the off switch, but between you and it is a hulk of a man who ain't gonna let you past without a fight.

Using a variety of kicks and punches you must beat your opponent to reach the switch in time. Fail, and a dripping red curtain comes down on the action when girl and blade meet. Stop that screaming, woman, and pull yourself together.

Ginger Bones and the Caverns of Doom is a hunchback-style game with poisoned apples dropping on you, flying arrows at knee and head height, and gaps to swing over on uncatchable ropes. This seemed the most difficult game of the four, with hazards coming thick and fast.

None of the games are original but the linking theme of classic movies blends well with the vintage



nature of the ideas. Best viewed as a four-in-one compilation of old favourites, newcomers to computing who probably haven't played

them will enjoy it, as will old hands wishing to indulge in a bit of nostalgia.

Pat Winstanley

Presentation 80%

Nicely done, no real complaints in this department.

Graphics 75%

A bit blocky and jerky, but clear and colourful.

Sound 80%

Rather simple but very well used and fits in well.

Addictiveness 70%

Probably won't keep you going for long.

Value 70%

I'd have liked another film for the price.

OVERALL 75%

Great fun, particularly for casual or younger players.

moves, while green means that you have a reputation as pure as the driven snow, and can get away with anything.

Your first opponent is Mild Martin, a boxer of excellent repute, but illegal moves are much more damaging and fun than the standard left hook. As you progress you will

meet such legends of the ring as Steady Eddie and Deadly Dan.

If boxing games are your cup of tea, have a go with this one. Possibly it's a little expensive in these days when the budget title is king, but it's playable and the graphics are well done.

Jo Wood

Presentation 75%

Good demo mode, and the joystick option is much easier to use than the keyboard.

Graphics 70%

Good use of colour considering the limits the game imposes.

Sound 50%

Not much is needed, and you don't get it!

Playability 85%

Blatant cheating adds an extra dimension.

Addictiveness 79%

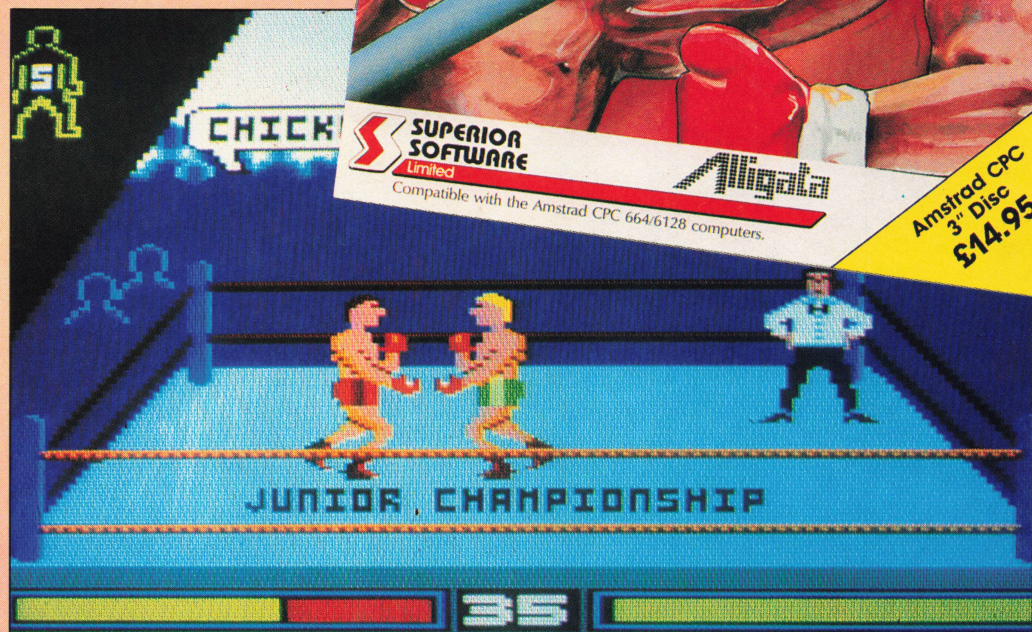
Nice enough, but not one I would keep returning to.

Value 78%

Fair.

OVERALL 78%

Punch up fans will find it worth adding to their collections, especially with the cheating element.



Blast those boats

Off Shore Warrior, Titus
£9.99 tape, £14.99 disc
Joystick or keys

If the nearest you've ever been to speedboat racing is blowing your rubber duck round the bath, here's a chance to get a flavour of the real thing without even getting wet.

In *Off Shore Warrior* you are a speedboat racer, with a difference – the year is 2049 and sports have become a little more dangerous. Not only do you have to pip your opponents to the post but, if you can, obliterate them too. One thing's for sure, if you don't do it to them, they'll certainly do it to you!

The races take place on the world's most prestigious lakes such as Victoria and Michigan. You view the speedboat from the rear, steering it forwards over a winding circuit. This is shown by a series of floating markers and, at the outer limits, protruding crags which lose you a few valuable seconds on impact. In the distance lies the horizon – different at each venue, and

suitably futuristic. Speed and quick reflexes are of the essence. At each level you are provided with a limited number of shots, usually two less than the number of opponents.

These increase as you progress through successive levels, so the chances of being blocked by an opponent become more likely. Whenever you collide with an enemy you suffer a time penalty.

At the top of the screen the number of shots, speed and position are all given. Changes in position can occur very rapidly so it is important to keep track of where you are. A spurt at the end, for example, can take you from last to first.

Unfortunately, the speedboats are badly drawn. If they had been better defined the game would have been a little less wearing on the old optic

fibres. There appears to be too much going on – water scrolling forwards, moving landscape beyond, markers, crags, opponents and so on.

Off Shore Warrior is a playable and addictive race game. Graphically, however, it is very flawed and disappoints accordingly. Stick to dry land.

Tony Flanagan



Presentation 61%

Pretty, if redundant, piccies between levels.

Graphics 47%

Blocky with jerky scrolling.

Sound 25%

Limited sound effects; no music.

Playability 76%

Certainly gets the adrenalin flowing.

Addictiveness 89%

Compulsive despite its flaws.

Value 48%

Better graphics would have made it worth buying.

OVERALL 49%

Lacks finesse.

Bomb the Bismark!

Night Raider, Gremlin
£9.95 tape, £14.95 disc
Joystick and/or keys

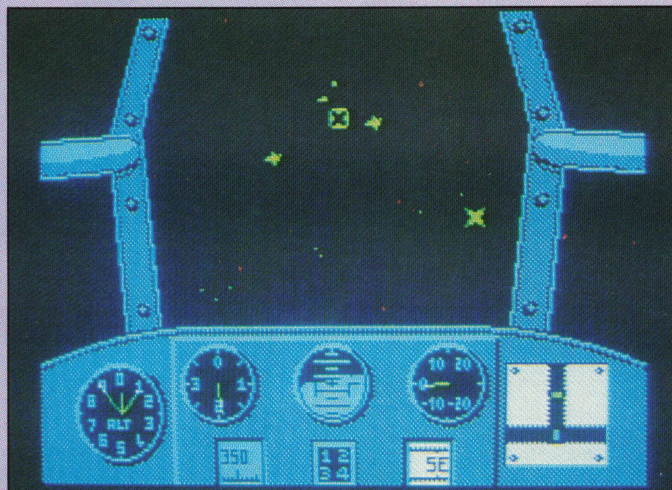
THE trouble with flight simulators is that they can take quite a long time to get into. This is fine if, once you've mastered the controls, the game is worth playing, but extremely frustrating otherwise. How refreshing, then, to find a flight combat game which is both relatively easy to get into and fun to play.

Night Raider takes you back to the early years of the Second World War. As a bomber pilot, it's your task to locate and destroy the Bismark, Germany's most dangerous battleship.

At the start of the mission you find yourself in the cockpit of your Avenger torpedo bomber, waiting to take off from the aircraft carrier HMS Ark Royal. You can flip between four main screens at will. The first displays the view from your cockpit window, below which is a range of real-time controls – altimeter, compass, air speed, artificial horizon and so on.

Enemy aircraft – in the form of Luftwaffe Dorniers – can be seen from the window as they approach. If you are flying low enough, the range of ships deployed against you can also be identified. And, of course, it is from this window that you can see the Bismark, providing you get that far.

Torpedoes can also be fired from this screen when you switch to fire mode, in which a movable sight



appears. With practise this proves to be extremely effective in combating the waves of enemy aircraft intent on your destruction.

The second screen provides the engineer's view of the Avenger, displaying an impressive range of controls. These are well laid out and easy to use. Without mastering them you will be unable to take off, land, or even drop torpedoes.

The first thing you must do on this screen is switch the light on. Then you can get the plane ready for action by selecting a fuel tank, setting a rich fuel mixture, pushing the throttle knob up to full, moving the arrester to Up, and making sure the wings are in the locked position. Of course, you mustn't forget to load up with torpedoes.

From there it's back to screen one, where you release the brake and pull back slightly on the joystick for a

comfortable take-off. Once airborne you return to the engineer's view to reset the controls to appropriate levels. Make sure you turn the light off, because leaving it on makes you vulnerable to attack.

The third screen provides the strategy element. A grid map shows an overview of the battle arena with your position in relation to the enemy aircraft and ships. Aircraft, E-boats and U-boats are all shown, as well as HMS Ark Royal and the Bismark.

On the fourth screen is the tail gunner's view. The objective here is simple – shoot any enemy craft you see. Constant flipping from screen one to four will ensure that you keep the Avenger virtually free from attack.

As all this demonstrates, Night Raider provides plenty to do and think about in equal quantities – just



how a game should be. A flight training mode is provided for the novice, and if you are a veteran you can exercise your high-flying skills on several different missions.

If you can manage to be four people at once – pilot, engineer, navigator and gunner – Night Raider is for you. Like the best of games, it is demanding, full of variety, and delightfully playable.

Tony Flanagan

Presentation 90%

Comprehensive playguide packed with historical detail. Practise and mission modes.

Graphics 81%

Excellent layout, particularly screens two and three.

Sound 60%

Limited, but anything more would be unnecessary.

Playability 90%

Clear in its objectives with lots to do and plenty of challenge.

Addictiveness 86%

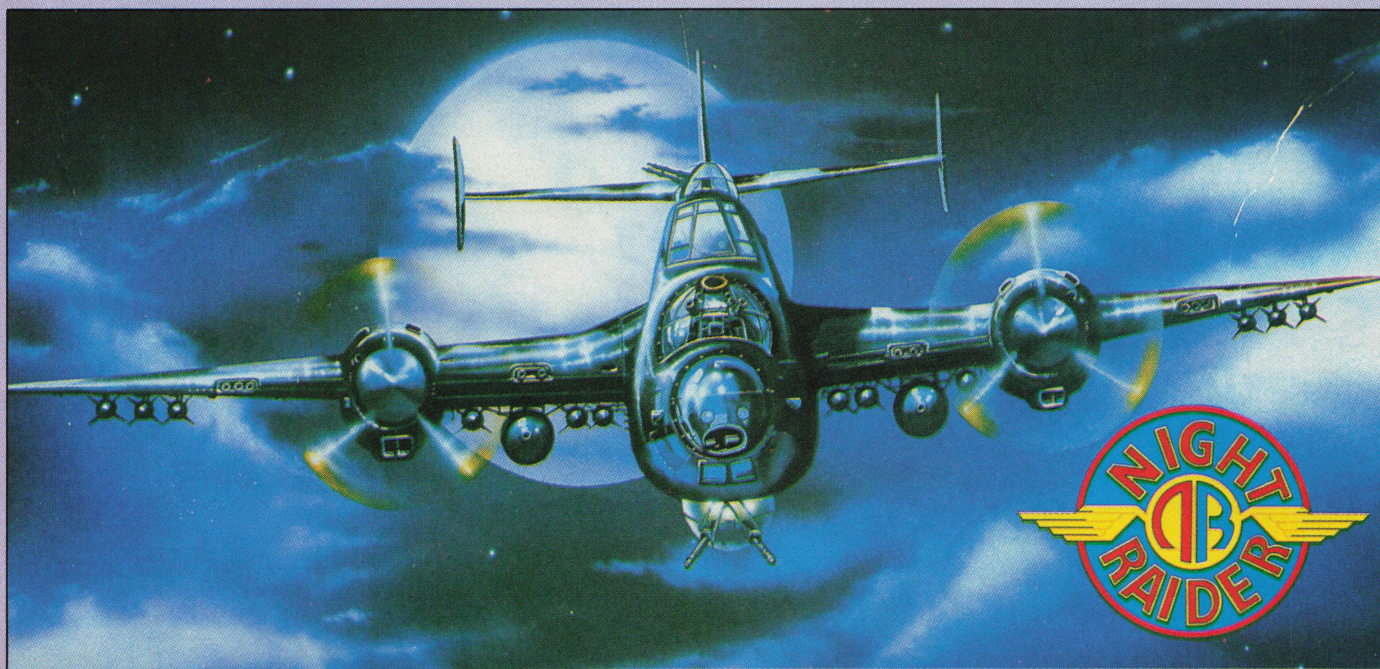
With several missions to complete, you should be attempting to sink the Bismark long into the Third World War.

Value 81%

A full game deserving its full price.

OVERALL 90%

Compelling flight/combat action.





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10 LINERS

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A REAL mismatch of routines makes up this month's batch of 10 Liners, which consists of a mathematical function plotter, a prime number calculator, and the almost obligatory arcade games.



POLAR CURVES

By Maurizio de Cesare

POLAR graphs form a continuous line around the origin – the point where X and Y axes cross. The mathematical function used to plot the shape is held in line 50, and this can be changed by altering everything after the = sign to one of those shown in Table 1.

```

2*th 80*(COS(th)-0.5)
80*SIN(th) 40*(COS(2*th)-1)
80*COS(2*th) 50*(COS(2*th)-0.5)
80 80*COS(3*th)
70+10*COS(6*th) 2*EXP(th/6.28)
70+10*COS(12*th) 70-40*SIN(2*th)
60+30*COS(6*th) 50-40*SIN(3*th)
60+30*RND(1) 50-40*SIN(th*th)
    
```

Table 1: Other polar functions

```

10 REM POLAR CURVES
20 REM by de Cesare Maurizio
30 ZONE 80:MODE 2:BORDER 0:INK 0,0:IN
K 1,19:DEFINT n:c=0:c$=CHR$(13):i$=CH
R$(24):SYMBOL AFTER 32:SYMBOL 42,0,0,
0,24,24,0,0,0:SYMBOL 255,0,0,1,126,18
2,54,54,0:LOCATE 20,1:PRINT i$POLAR
CURVES"i$ " by de Cesare Maurizio - I
taly"
40 PRINT:INPUT " Number of division
s: ",n:PRINT:PRINT " Interval in mu
ltiples of "CHR$(255)": ";:INPUT mpi:
PRINT:INPUT " Text output ? [Y/N] "
,z$:PRINT:INPUT " Axes ? [Y/N] ",a$
:in=mpi*PI:pa=in/n:IF UPPER$(a$)="Y"
    
```

SIEVE OF ERATOSTHENES

By Simon Bengé



PRIME numbers have fascinated mathematicians for thousands of years, and several methods have been devised for calculating them. Even as you read this, super computers in American universities are working flat out to find the next highest prime number, which is probably too big to be of any use.

One popular way of finding primes is to use the sieve method discovered by the ancient Greek Eratosthenes. This involves writing a list of numbers from one to any limit, for instance:

```

1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20
    
```

We now simply remove every second number after two, every third number after three, and so on.

When this process is complete, we'll be left with the prime numbers:

```

1 2 3 5 7 11 13 17 19
    
```

Simon's version will handle a maximum list of 4000 numbers, and takes a little over two minutes to find them all. This limit of 4000 is set by the memory available on the CPC464.

LINE	CHSUM	LINE	CHSUM
10	= 38208	60	= 14432
20	= 03552	70	= 06624
30	= 05248	80	= 64800
40	= 32416	90	= 18784
50	= 43168	100	= 61952

Get it right!

```

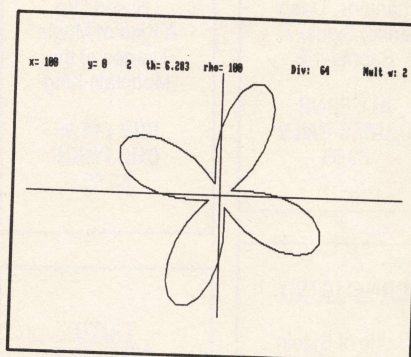
10 REM Prime number sieve
20 CLEAR:MODE 2:INPUT "Prime limit ?"
,nos:DIM prime(nos):DIM results(nos):
count=1:number=2
30 FOR f=1 TO nos:prime(f)=f:NEXT f:P
RINT "PRESS ANY KEY TO START CLOCK:"
WHILE INKEY$="" :WEND:time=TIME
40 FOR loop=1 TO nos:FOR seive=2*numb
er TO nos STEP number:prime(seive)=0:
NEXT seive:number=number+1:NEXT loop
    
```

```

50 res=1:FOR f=1 TO nos:IF prime(f)=0
THEN GOTO 70
60 results(res)=prime(f):res=res+1
70 NEXT f
80 tot=(TIME-time)/300:PRINT "Time tak
en=";tot;"secs"
90 PRINT "PRESS ANY KEY TO LIST NUMBE
RS:" :WHILE INKEY$="" :WEND
100 FOR f=1 TO res-1:PRINT results(f)
;";:NEXT f
    
```

When running the program you'll be asked to enter the number of divisions and multiples of Pi. For best results the divisions should be either 64 or 128, and the multiples either one, two, four or eight.

The variable rho is the distance from the current point on the curve to the origin. th is the angle between rho and the X axis. If all this sounds a bit dry, type it in and see the flower-like graphs the program generates.



```

THEN c=1
50 DEF FN rho(th)=50-40*SIN(4*th)
60 CLS:ORIGIN 320,200,639,0,383,16:PL
OT -320,0,c:DRAW 640,0:PLOT 0,-200:D
RAW 0,400:LOCATE 55,1:PRINT"Div: ";n
:LOCATE 70,1:PRINT"Mult "CHR$(255)":
;mpi:RAD:FOR th=0 TO in+0.01 STEP pa:
rho=FN rho(th)*2:x=rho*COS(th):y=rho*
SIN(th):xp%=CINT(x):yp%=CINT(y)
70 IF UPPER$(z$)="Y" THEN LOCATE 1,1:
PRINT"x=";ROUND(x,3);";:LOCATE 13
,1:PRINT"y=";ROUND(y,3);";:LOCATE
25,1:PRINT"th=";ROUND(th,3);";:L
OCATE 37,1:PRINT"rho=";ROUND(rho,3);"
"
    
```

```

80 IF th<>0 THEN DRAW xp%,yp% ELSE PL
OT xp%,yp%,1
90 NEXT th:LOCATE 1,25:INPUT"Again [Y
/N] ",z$:IF UPPER$(z$)="Y" THEN RUN E
LSE END
    
```

LINE	CHSUM	LINE	CHSUM
10	= 42240	60	= 64704
20	= 11648	70	= 10112
30	= 51200	80	= 45248
40	= 08192	90	= 49440
50	= 54528		

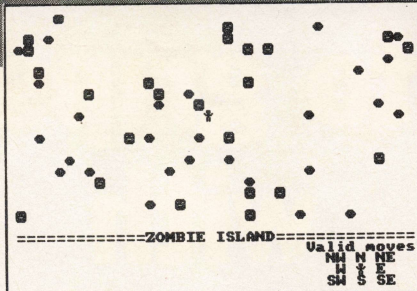
Get it right!

ZOMBIE ISLAND

by Patrick Beauteament

MOST arcade games rely too heavily on superb reactions mixed with a touch of luck. Patrick obviously became a little fed up with this, and he has written a short game that requires a bit more thought.

You are stuck on a small island which, as you've probably guessed, is inhabited by zombies. These move closer and closer to you, and your only chance of survival is to lead them into the pits scattered



about. These kill zombies falling into them.

Movement is controlled by entering the compass direction when asked. The zombies will then



all move one place towards you, and if you've chosen correctly a couple of them will fall to their deaths. If two zombies bump into each other, one of them will be obliterated.

You aim is to last as long as possible, and try to kill them all off. If you manage it, you'll move on to the next screen. A fair amount of thought and planning is required to survive in this extremely addictive game.

```
10 DEFINT a-z:c$="NE,SW,SE,NW":RANDOM
IZE TIME:DIM z(30),e(30),g(30),h(50),
j(50):MODE 1:INK 0,0:INK 1,1:INK 2,6:
INK 3,26:PAPER 3:CLS:PEN 0:LOCATE 1,2
1:PRINT STRING$(40,""):LOCATE 30,22:
PRINT"Valid moves":LOCATE 32,23:PRINT
"NW N NE":z$=CHR$(225):d$="died!"
20 m$=CHR$(248):LOCATE 33,24:PRINT"W
";m$;" E":LOCATE 32,25:PRINT"SW S SE"
:n=14+(RND*15):a=n:w=19+(RND*30):f=0:
q=0:PEN 2:FOR c=1 TO n:z(c)=1:e(c)=1+
(RND*39):g(c)=1+(RND*19):LOCATE e(c),
g(c):PRINT z$:NEXT:PEN 0:FOR c=1 TO w
:h(c)=1+(RND*39):j(c)=1+(RND*19)
30 LOCATE h(c),j(c):PRINT CHR$(231):;
NEXT:LOCATE 14,21:PRINT"Thinking ..."
:FOR c=1 TO n:FOR d=1 TO w:z(c)=1+((
e(c)=h(d)) AND (g(c)=j(d)))=a+a*(z(c)
=0):NEXT d,c:x=1+(RND*39):y=1+(RND*19
):LOCATE 14,21:PRINT"ZOMBIE ISLAND":L
OCATE x,y:PEN 1:PRINT m$
40 LOCATE 1,22:PRINT CHR$(7):;INPUT "
Your move :";g$:g$=UPPER$(g$):IF INST
```

```
R(c$,g$)=0 THEN PRINT"Try again":GOTO
40 ELSE FOR d=22 TO 25:LOCATE 1,d:PR
INT SPACE$(29):NEXT:LOCATE x,y:PRINT
":y=y+(g$="N")-(g$="S")+(g$="NW")-(g
$="SW")+(g$="NE")-(g$="SE")
50 x=x-(g$="E")+(g$="W")-(g$="NE")+(g
$="NW")-(g$="SE")+(g$="SW"):FOR c=1 T
O w:IF x=h(c) AND j=j(c) THEN 100 ELSE
E NEXT c:FOR c=1 TO n:IF z(c)=1 AND x
=e(c) AND y=g(c) THEN 100 ELSE NEXT c
:LOCATE x,y:PRINT m$;:FOR c=1 TO n:IF
z(c)=0 THEN 90
60 LOCATE e(c),g(c):PRINT ":r=(-1*(
x>e(c)))+(1*(x<e(c))):v=(-1*(y>g(c))
)+(1*(y<g(c))):e(c)=e(c)+r:g(c)=g(c)+v
:FOR d=1 TO w:IF e(c)=h(d) AND g(c)=j
(d) THEN f=1:GOSUB 100:z(c)=0:a=a-1
70 NEXT d:FOR s=1 TO n:IF c=s OR z(c)
=0 OR z(s)=0 THEN 80 ELSE IF e(c)=e(s
) AND g(c)=g(s) THEN z(s)=0:PEN 2:LOC
ATE 1,22:PRINT"One zombie squashed an
other2;:q=1:gosub 100:a=a-1:for d=1 t
o 50:next d:locate 1,22:space$(29)
```

```
80 NEXT s:IF e(c)=x AND g(c)=y THEN P
EN 2:LOCATE e(c),g(c):PRINT z$:q=1:GO
SUB 100:GOTO 100 ELSE k=(z(c)<>0):WHI
LE k:LOCATE e(c),g(c):PEN 2:PRINT z$:;
:SOUND 1,1000,15,12,0,0,30:k=0:WEND
90 NEXT c:PEN 1:IF a<=0 THEN d$="WON!
":GOTO 100 ELSE FOR d=22 TO 25:LOCATE
1,d:PRINT SPACE$(29):NEXT:GOTO 40
100 IF f=1 THEN FOR t=0 TO 18:SOUND 2
,16+(t*35),5,12:NEXT:f=0:RETURN ELSE
IF q=1 THEN SOUND 3,4000,10,12,0,0,10
:q=0:RETURN ELSE PEN 1:LOCATE 1,23:PR
INT"You ";d$;:LOCATE 1,24:PRINT"Press
spacebar to play":WHILE INKEY$<>" ":
WEND:RUN
```

LINE	CHSUM	LINE	CHSUM
10	= 27392	60	= 49120
20	= 21344	70	= 43648
30	= 34016	80	= 23200
40	= 42368	90	= 43200
50	= 55520	100	= 32160

Get it right!

MONSTER MAZE

BY Peter Timming



PURSUING baddies around a maze is nothing new, but this game includes another monster chasing you. The object is to place a cross on a continually moving face, at the same time as avoiding the guardian

who's hell bent on your destruction.

Your movement is controlled by the Z, X, < and > keys, and when the cross is positioned on the face, press the spacebar to kill him. Whether you win or lose, the length

of time you lasted will be displayed.

The guardian can be trapped by the blocks in the maze, but you'll need quick reflexes and plenty of luck if you're to succeed.

```
10 DEFINT a-z:MODE 1:DIM scr(41,26):B
ORDER 0:INK 0,0:INK 1,26:INK 2,15:INK
3,24:ENT 1,8,-3,1:PEN 3:FOR n=1 TO 9
0:bx=RND*38+1:by=RND*23+1:LOCATE bx,b
y:PRINT CHR$(233):scr(bx,by)=3:NEXT
20 x=12:y=12:LOCATE x,y:PRINT CHR$(20
3):ax=RND(1)*38+1:ay=RND(1)*24+1:LOCA
TE ax,ay:PRINT CHR$(225):cx=RND*38+1:
cy=RND*23+1:LOCATE cx,cy:PRINT CHR$(1
78):t:=TIME
30 CALL &BD19:LOCATE x,y:PRINT CHR$(1
6):LOCATE ax,ay:PRINT CHR$(16):LOCATE
cx,cy:PRINT CHR$(16)
40 IF INKEY(69)=0 AND scr(x,y-1)<3 AN
D y>1 THEN y=y-1 ELSE IF INKEY(71)=0
AND scr(x,y+1)<3 AND y<25 THEN y=y+
1 ELSE IF INKEY(39)=0 AND scr(x-1,y)<
3 AND x<1 THEN x=x-1 ELSE IF INKEY(3
1)=0 AND scr(x+1,y)<3 AND x>40 THEN
```

```
x=x+1
50 IF INKEY(47)=0 AND ax=x AND ay=y T
HEN mm$="You destroyed the enemy":GOT
O 90 ELSE IF INKEY(47)=0 THEN SOUND 1
,78,15,7,0,1
60 IF RND>0.5 AND scr(ax-1,ay)<3 AND
ax<1 THEN ax=ax-1 ELSE IF RND<0.5 AN
D scr(ax+1,ay)<3 AND ax>40 THEN ax=a
x+1 ELSE IF RND<0.5 AND scr(ax,ay-1)<
3 AND ay<1 THEN ay=ay-1 ELSE IF RND<
0.5 AND scr(ax,ay+1)<3 AND ay>25 THEN
ay=ay+1
70 IF x<cx AND scr(cx-1,cy)<3 AND cx<
>1 THEN cx=cx-1 ELSE IF x>cx AND scr(
cx+1,cy)<3 AND cx>40 THEN cx=cx+1 EL
SE IF y<cy AND scr(cx,cy-1)<3 AND cy<
>1 THEN cy=cy-1 ELSE IF y>cy AND scr(
cx,cy+1)<3 AND cy>25 THEN cy=cy+1
80 CALL &BD19:PEN 1:LOCATE x,y:PRINT
```

```
CHR$(203):PEN 2:LOCATE ax,ay:PRINT CH
R$(225):PEN 3:LOCATE cx,cy:PRINT CHR$
(178):f!=FRE(""):IF cx=x AND cy=y THE
N mm$="The guardian caught you":GOTO
90 ELSE 30
90 FOR n=1 TO 20:WHILE SQ(1)>127:WEND
:SOUND 1,RND*50,7,7,0:NEXT:CLS:PEN 1:
PRINT mm$:PEN 2:PRINT"Time elapsed:"R
OUND(((TIME-t!)/300),3)"seconds":PEN
3:PRINT"Press space to start again":W
HILE INKEY(47)=-1:WEND:RUN
```

LINE	CHSUM	LINE	CHSUM
10	= 44992	60	= 14240
20	= 18208	70	= 08448
30	= 63360	80	= 50048
40	= 05312	90	= 49664
50	= 43072		

Get it right!

HOW does a CP/M program differ from any other piece of Z80 machine code? Answer – it doesn't, except that it's automatically loaded at, and run from, address &0100 when you enter its name.

It follows that a program assembled to start at this address using the instruction:

```
ORG &0100
```

and named with the extension .com is treated as a command file.

One point to watch out for is that once a file is loaded control immediately passes to address &0100. For this reason you should ensure that any data within the program isn't placed at the beginning, otherwise it would be executed as code, resulting in a crash.

CPC464/664 machines come with CP/M version 2.2, although version three (or Plus as it is known) comes as an extra with the CPC6128. As far as the programmer is concerned there are not many differences between the two, and a program written to run under CP/M2.2 should run on CP/M Plus. The reverse isn't always true, as Plus supports a larger area in which to run programs – TPA, transient program area – and has a few extra facilities.

One of these I'll mention now, as it's a point of contact between CP/M and the Amsdos we all know and love. CP/M2.2 doesn't support any firmware routines, while Plus allows you to access quite a few. This may seem like a catastrophe, but it isn't.

The idea behind CP/M is to write software which is portable between the machines which support it, and if you use firmware calls you make your program specific to the CPC6128. If you are using CP/M solely to gain access to something like random access filing and don't intend your program to run on another machine, this is acceptable.

CP/M has a set of calls roughly equivalent to the Amsdos firmware, even if they are limited in scope. What I aim to do in this article is, by a few simple examples, show how easy it is for a machine code programmer of modest abilities to start writing CP/M programs.

Using the freebies

All the routines listed have been written in Z80, but it's possible that some of you don't have access to a Z80 assembler. Luckily, a primitive 8080 assembler is included on your CP/M disc.

For this reason, the examples show both formats of assembly code, Z80 in the left column, and 8080 in the right.

Getting to grips with CP/M

Phil Lawson takes a Z80 programmer's view of CP/M, and identifies some of the highlights and pitfalls

Control Program for Microprocessors – CP/M – was devised to provide a standard interface to disc-based computer systems for users and programmers. Over the past decade it has been improved so much that, with the extra commands and utilities bundled in, it's become more of a programmer's tool than just an operating system.

In CP/M, routines and programs are called commands, and can easily be recognised by the .com extension to their filenames. To execute them simply enter their name at the A> prompt, omitting the .com part.

What makes CP/M so popular is that programs written for one machine can be transported to another with little or no modification. This means that once you have CP/M installed on your micro, a whole host of software packages becomes available.

Also included on the master disc is a limited editor called ED.COM. Here's a brief summary of how to use it.

The first thing to do is enter:

```
ED filename.asm
```

which runs the editor, and makes it save the data under the specified filename. The .asm extension shouldn't be omitted, as its presence is required by the assembler later on.

When the * prompt appears enter i for insert, and start entering the instructions, pressing Enter/Return after each one. When all the code has

been typed in, Ctrl+X will take you back to the *. Entering e will now save the data under the given filename, and return you to the A> prompt. Alternatively, bald chested non-masochists can use their word processor and save the files as plain vanilla Ascii.

To assemble the code make sure ASM.COM is on the same disc and enter:

```
ASM filename
```

Various files will then be produced. The one of most interest to us has the extension .hex, as it's this one we use to produce the .com file. Table I shows how hex files are constructed, each line of which which follows the structure:

```
:Bytes Address Type Data Checksum
```

The way to generate a .com file depends on whether you're using CP/M2.2 or Plus. Under CP/M2.2 we make use of another utility that comes on the system disc – LOAD.COM – which simply creates a .com file, with the same name as the specified .hex file, for instance:

```
LOAD filename.hex
```

will produce filename.com.

With CP/M Plus you still use a utility on the system disc, but this time it's HEXCOM. Use this in a similar way:

```
HEXCOM filename
```

which will produce filename.com.

Down to business

That's the theory over and done with, lets start doing something. Examining Table II reveals some of the input and output routines available to us. We'll use these to write a small program to accept a character from the keyboard and display it on the screen.

To execute a CP/M function we have to set up registers with entry values, and CALL a particular address. For all Bdos functions this is &0005, which selects the correct routine depending upon the value of the C register. The computer will execute your command and eventually return to the address immediately after the CALL &0005

```
:080100005702CDC101FEFFC280
:000000000000
No of bytes – &08
Start addr – &0100
Type – &00
Data – &57 to &C2
Checksum – &80
```

Table I: Example format of HEX files

Bdos	Function	Entry Parameters	Returned Parameters
0	System reset	C=00H	None
1	Console input	C=01H	A=Character
2	Console output	C=02H,E=Char	None
3	Auxiliary input	C=03H	A=Character
4	Auxiliary output	C=04H,E=Char	None
5	List output	C=05H,E=Char	None
9	Print string	C=09H,DE=String Address	None

Table II: Some useful Bdos function calls

instruction. Load your editor, enter Listing I and, when you're sure there are no errors in your typing, assemble the code.

Some assemblers will create a .com file automatically, and will require you to insert whatever commands are necessary to specify the resulting filename.

Other assemblers should at least allow you to generate a hex file, which can be converted with LOAD or HEX.COM. If the worst comes to the worst, use ASM.

Z80	8080
ORG &0100	ORG 256
LD C,1	MVI C,1
CALL &0005	CALL 5
LD E,A	MOV E,A
LD C,4	MVI C,4
CALL &0005	CALL 5
RET	RET

Listing I

First of all the program tells the assembler to begin the code at address &0100. We then use function one to wait until a key has been pressed, which then returns the Ascii value of that key in the A register. This value is transferred to E, and function four is called to display it on the screen.

Assuming you have managed to produce a .com file, enter its name (without the .com) and it will load and execute. When the drive light stops flashing, press any key on the keyboard – preferably in the range of A to Z. You should see the corresponding letter displayed on the screen, and the A> prompt will reappear, awaiting your next command.

This may not seem very spectacular, but rejoice anyway. You've just written your very first CP/M program, something to be proud of indeed.

Function four could be used to print a string of characters one at a time, but this would be rather longwinded. Fortunately another function is available for this purpose, as shown in Listing II. Only two things need to be set up before using this function – the address of the start of the string in DE, and the function number in C.

Z80	8080
ORG &0100	ORG 256
LD DE,STRING	LXI D,STRING
LD C,9	MVI C,9
CALL &0005	CALL 5
RET	RET
.STRING	STRING
DEFB "Hello\$"	DB "Hello\$"

Listing II

The dollar sign at the end of the word Hello tells function nine to stop printing characters and return to the calling program. If we required this symbol in the text we would have to make use of function four, as described earlier.

Printing plain text may seem a little restrictive, so fortunately the normal control codes are accessible. Listing III shows how we'd go about setting the pen, paper and ink.

Z80	8080
ORG &0100	ORG 256
LD DE,SETINK	LXI D,SETINK
LD C,09	MVI C,9
CALL &0005	CALL 5
LD DE,SETPAPER	LXI D,SETPAPER
LD C,09	MVI C,9
CALL &0005	CALL 5
LD DE,SETPEN	LXI D,SETPEN
LD C,09	MVI C,9
CALL &0005	CALL 5
LD E,12	MVI E,12
LD C,02	MVI C,2
CALL &0005	CALL 5
LD DE,PRINT	LXI D,PRINT
LD C,09	MVI C,9
CALL &0005	CALL 5
RET	RET
.SETPEN	SETPEN
DEFB 15,01,"\$"	DB 15,01,'\$'
.SETPAPER	SETPAPER
DEFB 14,00,"\$"	DB 14,00,'\$'
.SETINK	SETINK
DEFB 28,00,02,06	DB 28,00,02,06
DEFB 28,01,26,00	DB 28,01,26,00
DEFB "\$"	DB '\$'
.PRINT	PRINT
DEFB "message\$"	DB 'message\$'

Listing III

Not into machine code?

Don't panic! Assembly language isn't the only way of programming under CP/M. In fact there are more languages available to run under CP/M than there are under Amsdos. And what's more, many of them are in the public domain, and can be picked up for a nominal fee from a PD library.

You might like to try your hand at compiled Basic, Pascal, C, Cobol, Forth, Mumps, or any number of other languages ranging from the well known to the totally obscure. At a few pounds per disc you have little to lose.

Alternatively, you might like to contact Locomotive (0306 887902) which sells Mallard Basic to run under CP/M. It is not unlike Locomotive Basic except that it substitutes very advanced random access filing for graphics and sound.

Hisoft (0525 718181) markets a range of languages, and it's worth noting that these include a compiled Basic, Modula 2, Pascal, and a slightly non-standard C (mainly due to the lack of floating point arithmetic) which comes with an Amsdos version.

Bdos function two prints single characters on the screen in a similar way to function four, except that it allows non-printable characters – or control codes – to be used. In Listing III we use this to clear the screen with control code 12. Table III shows a list of the other codes used, along with their Basic equivalent. There are 30 control codes, as shown in the user guide.

Now you've seen how simple it is to write command files, perhaps you'll take CP/M more seriously. It is especially worth investigating if you hope to move up in the world to MSdos as found on the Amstrad PC and other IBM clones, as there are many similarities.

● We've only managed to scratch the surface of CP/M, but you should feel confident enough to tackle the subject a little further on your own. We would like to know how much interest there is in CP/M programming, so please write and let us know if you would like to see more, particularly CP/M Plus which we haven't covered before.

Control code	Basic equivalent
15,01	PEN 1
14,00	PAPER 0
28,00,02,06	INK 0,2,6
28,01,26,00	INK 1,26,0

Table III: The control codes used

LOVE 'em or hate 'em, adventures are here to stay. What started as a massive program hidden in a university mainframe has become a boom industry with millions of followers. We have previously printed several mini-adventures which have proved quite popular. So if you fancy a go at writing your own but can't manage the programming, let Scribe do the hard work for you.

The idea is that you design your adventure and type the information into Scribe, which will then run it for you. Before using the utility, however, it's a good idea to produce a plan of the game along with a table of object names and starting locations, as shown in Figure 1. When this has been completed you can begin to input the data.

Firstly you need to enter the number of objects and locations that will make up the adventure. Then every object's data is typed in, and this takes the form of the name followed by a comma and the location number.

You'll then have to say whether or not the object can be taken, with 1 meaning yes and 0 no. Specifying a negative value will cause that much

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damage when the player attempts to take the object.

As some locations may include doors or gates that require unlocking, we have to say if an object is a key or similar device. This is done at the next prompt by entering 2, and care should be taken not to end up with a key that's needed to open a door but

cannot be picked up.

Once finished, it's time to enter the descriptions of the locations along with the directions in which movement is allowed. When the descriptive part of a location has been typed in you'll be prompted for every one of the six possible directions.

In Figure 1, travelling north from the forest puts us next to a gate, whereas south takes us to the clearing. To enter this information we input the location numbers, which in this case are 3 for north, and 2 for south. It isn't possible to travel in the other four directions – East, West, Up and Down – so we enter the value zero.

Examining location three shows the presence of a gate, which by its very nature will require some action before allowing us to progress westward. This is done by turning the value for west into a negative number, in this case –4. There is no need to set a negative value for east in location four, as the gate must have been opened for us to get there.

Only two things remain to be entered, the first of which is the player's initial strength. This value is decreased each time a command is accepted, and trying to take

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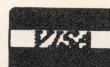
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damaging objects will decrease it even further.

The objective is to reach a certain location before your strength falls to zero. This location is the last thing to be entered when setting up the adventure.

The program shows some of the more useful tips for adventure writers, including how to treat the player as a location – in this case location 0. This allows objects to be taken and dropped simply by altering their location number.

As the routine is rather short you may wish to enhance it a little, adding extra commands, a save and load routine or a few monsters to bash.

If you wish to attempt the built-in adventure – Enchanted Castle – before entering your own data, type Y at the *pre-programmed data* prompt. The currently available commands are North, South, East, West, Up, Down, Take, Drop, Unlock and Quit. To use the Take and Drop instructions, first enter the command, press Return, and when asked, enter the object's name.

Turn to Page 28 ►

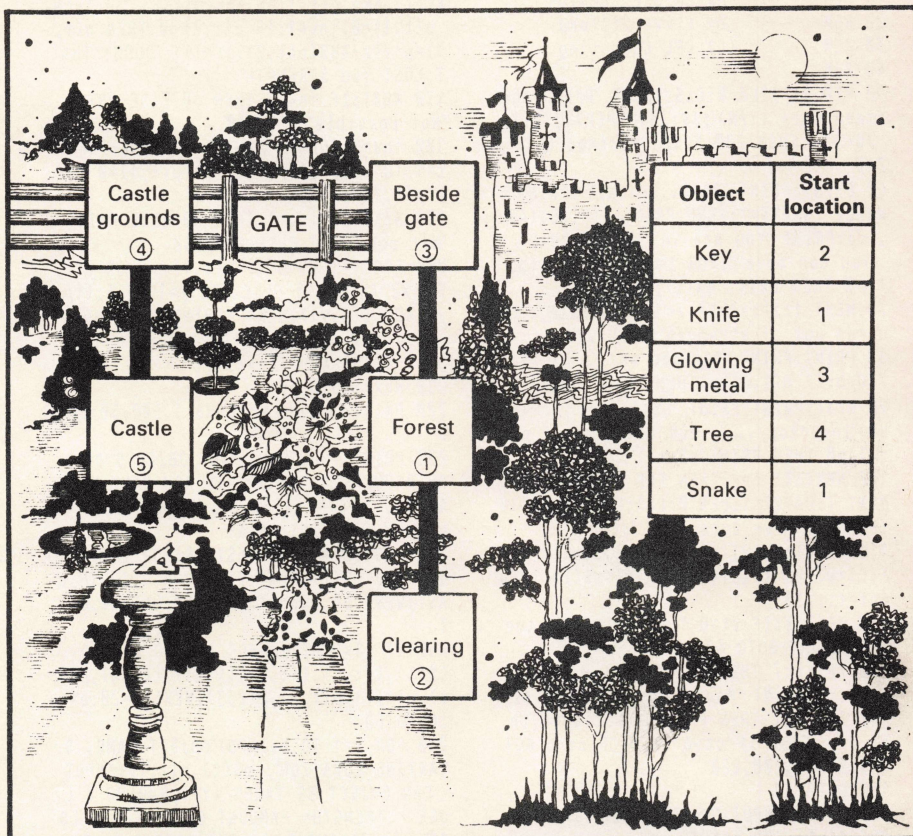


Figure 1: Adventure plan with object starting locations

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```

10 REM      MINI-ADVENTURE CREATOR
20 REM      By Clive Gifford
30 REM      (C) CPC Computing
40 REM
50 PEN 1:PAPER 0:CLS:INPUT "Pre-progr
ammed data (Y/N)";J$:J$=UPPER$(J$):IF
J$<>"Y" THEN 230 ELSE b=5:c=b: GOTO
240
60 PRINT:PRINT "PRESS ANY KEY":PRINT:
WHILE INKEY$=""WEND:PRINT STRING$(40
,"-"):PRINT "You are in ";L$(p):PRINT
"You can move "FOR t=1 TO 6:IF L(p,
t)>0 THEN PRINT M$(t);"...
70 NEXT t:z=z-1:IF z<1 THEN PRINT "Yo
u run out of strength":GOTO 220
80 PRINT:PRINT "You can see":FOR t=1
TO b:IF p(t,1)=p THEN PRINT P$(t)
90 NEXT:PRINT:PRINT "Strength";z:PRI
NT "Inventory...";FOR t=1 TO b:IF p(
t,1)=0 THEN PRINT P$(t);"...
100 NEXT:IF p=e THEN FOR T=1 TO 3000:
NEXT T:PAPER 1:PEN 0:CLS:LOCATE 13,10
:PRINT "You've Done It!!!":END
110 PRINT:INPUT a$:a$=UPPER$(a$):PRIN
T:CT=0:FOR t=1 TO 10:IF a$=M$(t) THEN
ct=t:t=10
120 NEXT t:IF ct=0 THEN PRINT "No suc
h command":GOTO 60
130 IF ct<7 THEN IF L(p,ct)>0 THEN p=
L(p,ct):PRINT "Moving Now...":GOTO 60
140 IF ct<7 THEN PRINT "Can't move th
at way" ELSE IF ct>6 THEN ON ct-6 GOT
0 160,180,200,220
150 GOTO 60
160 inv=0:INPUT "OBJECT NAME";a$:a$=U
PPER$(a$):FOR t=1 TO b:IF a$=UPPER$(p

```

```

$(t)) AND p(t,1)=p AND p(t,2)<>0 THEN
p(t,1)=0:inv=1:IF p(t,2)<0 THEN p(t,
1)=p:z=z-ABS(p(t,2)):PRINT "OUCH! THA
T LOST YOU STRENGTH"
170 NEXT:IF inv=1 THEN 60 ELSE PRINT
"Not possible":GOTO 60
180 inv=0:INPUT "OBJECT NAME";a$:FOR
t=1 TO b:IF a$=p$(t) AND p(t,1)=0 THE
N p(t,1)=p:inv=1
190 NEXT:IF inv=1 THEN 60 ELSE PRINT
"Not possible" ELSE GOTO 60
200 FOR t=1 TO b:IF p(t,1)<>0 OR p(t,
3)<>2 THEN 210 ELSE FOR y=1 TO 6:L(p,
y)=ABS(L(p,y)):NEXT :PRINT "Any locks
here now unlocked":FOR t=300 TO 120
STEP-30:SOUND 1,t:NEXT
210 NEXT:GOTO 60
220 PRINT "Goodbye":SOUND 1,300,50:EN
D
230 PRINT:INPUT"HOW MANY OBJECTS DO Y
OU REQUIRE";b:INPUT "AND HOW MANY LOC
ATIONS";c:DIM L$(c),L(c,6),m$(10),p$(
b),p(b,3):PRINT:PRINT
240 CLS:INV=1:P=1:RESTORE:FOR t=1 TO
10:READ m$(t):NEXT:DATA NORTH,SOUTH,E
AST,WEST,UP,DOWN,TAKE,DROP,UNLOCK,QUI
T
250 IF j$="Y" THEN FOR t=1 TO b:READ
L$(t),L(t,1),L(t,2),L(t,3),L(t,4),p$(
t),p(t,1),p(t,2),p(t,3):NEXT:z=20:e=b
:GOTO 60
260 FOR t=1 TO b:INPUT"OBJECT NAME, S
TARTING LOCATION"; p$(t),p(t,1):INPUT
"CAN OBJECT BE TAKEN (Y=1,N=0,NO & L
OSE STRENGTH= -AMOUNT OF STRENGTH LO
ST";p(t,2):INPUT "IS THE OBJECT A KEY

```

```

OR SIMILAR =2";p(t,3):NEXT
270 FOR t=1 TO c:INPUT "LOCATION NAME
:";L$(t):FOR y=1 TO 6
280 PRINT m$(y);" = ";INPUT L(t,y):I
F L(t,y)<c THEN GOSUB 310:GOTO 280
290 NEXT y:NEXT t:PRINT:INPUT "STARTI
NG STRENGTH";z
300 INPUT "END LOCATION NUMBER";e:IF
e<1 OR e>c THEN 300 ELSE GOTO 60
310 PRINT:PRINT "INVALID DATA ENTRY..
.TRY AGAIN":PRINT:PRINT:SOUND 1,300,3
5:RETURN
320 DATA "in the forest",3,2,0,0,"KEY
",2,1,2,"in a clearing",1,0,0,0,"KNIF
E",1,1,0,"by a large gate",0,2,0,-4,"
GLOWING METAL",3,-10,0
330 DATA "in the castle grounds",0,5,
3,0,"TREE",4,0,0,"at the Enchanted Ca
stle",0,0,0,0,"SNAKE",1,-20,0

```

✓ Get it right!

10 = 21376	120 = 03200	230 = 36896
20 = 26528	130 = 18432	240 = 62208
30 = 13760	140 = 01600	250 = 53088
40 = 08224	150 = 53792	260 = 14784
50 = 32224	160 = 43232	270 = 47328
60 = 03008	170 = 64608	280 = 17376
70 = 41824	180 = 24032	290 = 43424
80 = 08000	190 = 63552	300 = 13888
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FOUR GOLD MARKS

PHIL LAWSON examines a selection of goodies from Goldmark

WHEN a company is best known for one type of product it's often difficult for it to branch out in other directions. The name Goldmark Systems probably brings to mind tape-to-disc copiers, but now it has released a few packages which depart from this image.

Character designer and printer buffer

Designing characters for displaying on the screen can be a tricky task for the inexperienced, and redefining the printer's character set a real headache. Assuming your printer has this facility, the manual will probably attempt to describe the process involved in that marvel of modern linguistics, Japlish

— an English translation from the Japanese by a Japanese.

Consequently many people ignore the feature. Thankfully, if you have an Epson-compatible printer, Goldmark's designer handles most of the complexities leaving you free to get on with the actual designing.

At the top of the display is a series of 32 blocks allowing 16 screen and printer characters to be redefined and stored. The display shows two grids, one representing a screen character and the other for the printer. This means that it is possible to redefine how a character is printed without altering its on-screen appearance.

The new characters can then be saved to disc or tape, and you can choose between the two at the start of the program. A slight oversight is that

you cannot change from disc to tape or vice-versa without re-running the program.

Loading previously-stored character sets allows further editing at a later date, but there's no facility to catalogue the disc. So if you forget the filename you'll have to quit, do a CAT, and run the program again.

The save and load commands are selected from a short menu which has many other options to help with character definition. These include clear, inverse, move, mirror and rotate, all of which adds up to a fairly comprehensive editing package. Finally, to download the new graphics to the printer you run the installation program which uses the saved data.

One problem is that many printers have only 2k or less of ram. This can limit the number of redefined characters, and you may find yourself sitting around waiting for text to print out because of limited buffer size.

The answer is an additional printer buffer, or to enlarge the one fitted. Surprise, surprise, if you have an Amstrad DMP series printer Goldmark also produces an upgrade. It increases the printer's internal buffer to 8k, which will hold nearly four pages of text.

This is quite useful, as you can send this much text to the printer, and while it is busy your CPC is free for use. A short instruction sheet explains how to fit the buffer, which is simply a ram chip, and what changes to make to the printer's circuit board. If you are a novice you may want to get somebody qualified to do it for you.

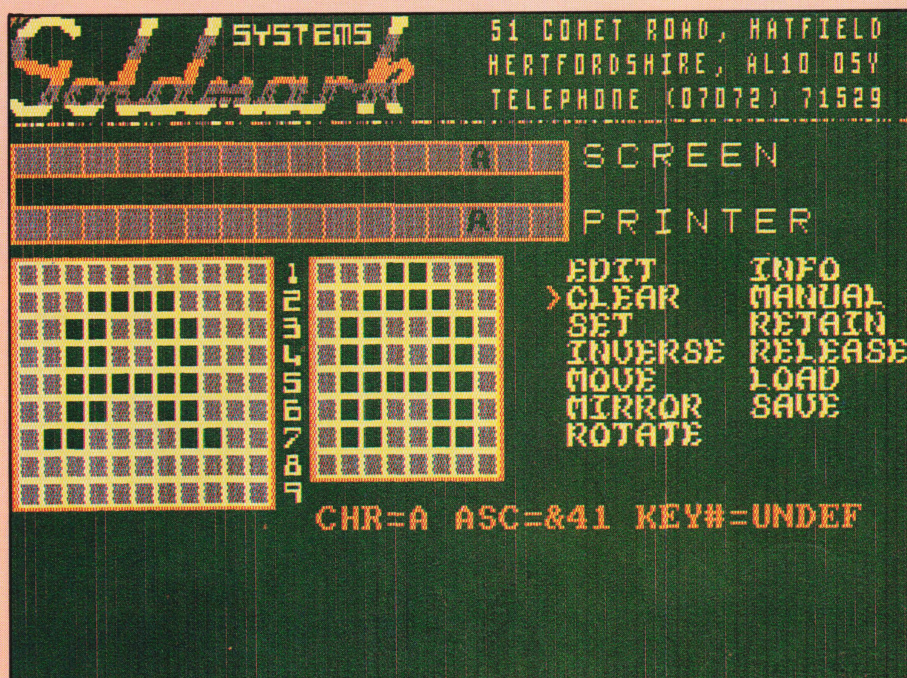
Fun in the City

Have you ever wondered what it's like to dabble in the stock market? Many people are attracted by the world of high finance, but don't want to risk losing their life savings. One way to satisfy these urges — and keep the family fortune intact — is to invest in a stocks and shares simulation such as Shareplay.

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Sixteen companies and their current share prices are displayed, along with the market index. Deciding where to put your money can be a daunting task, but take my advice and spread it around a bit. If one company should go to the wall, you'll still have some cash left.

Government policies and trade union actions can affect prices dramatically, and terrorist activity near



Character design made easy

Turn to Page 30 ►

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E	BONDS BREWERY	162	M	SA UTIL	
F	MBI COMPUTERS	293	N		
G	A.C. SOFTWARE				
	CHE				

Make a million on the stockmarket

◀ From Page 29

mines can push the price of gold up to the limit. Certain commodities will always produce a high yield, unless the market should crash.

Buying and selling should be carried out with caution, as sudden and unwarranted decisions may bring your financial practices under close scrutiny. This usually results in your bank account being taxed, not to mention heavy fines that can wipe out a fortune overnight.

Your score is saved automatically

when you end a session, but I would have liked a save-game feature. This game is quite addictive, but I think it would do better if its £14.99 price tag was lowered a little. After all, at this level it is competing with quality arcade games and adventures.

Singa alonga CPC

Last, but by no means least, we have Tunesmith. Most CPC games incorporate music, ranging from simple bleeps to a full-blown tune. The problem for most people wanting to write

computerised music is that they are not trained in how to string notes together. Being tone deaf doesn't help much either.

Tunesmith converts your keyboard into a simple eight-octave electronic organ. Synth mode adds a touch of futuristic sound for zap-and-blast games, with the organ mode best used for title music.

Playback will let you enter the notes one at a time and listen to the result at full speed. The main drawback is that you can't edit the tune to alter one or two notes. The only method of doing this is to save the music as a Basic program, and change the notes within the resulting data statements.

This facility to save music as a program is very welcome, and even complex tunes are stored in relatively short code. With a little practice, you'll soon be churning out the melodies with the alacrity of Messrs Rice and Lloyd-Webber.

Products: Character Font Designer £11.99 disc, £7.99 tape (CPC464 only); DMP Printer Buffer £12.50; Shareplay £12.00 disc only; Tunesmith £12.00 disc only.

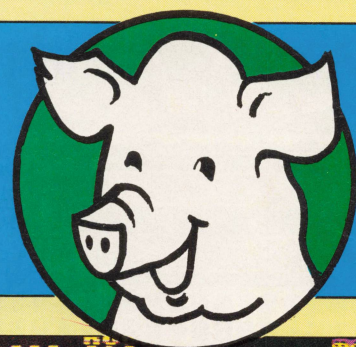
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CPC

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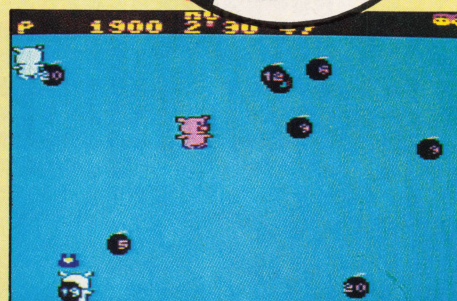
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Scattered around are time bombs. Walk over one to pick it up, press Fire to send it towards another player and, if you get the timing right, he'll be blown to bits. Get it wrong, and you may end up with a burning desire to go flying.

Psycho Pig UXB is a game in horribly bad taste, but it's great fun and really addictive. The music's very catchy too.

For just £7.99 (tape) or £11.99 (disc), Psycho Pig UXB is a must for everyone's collection.

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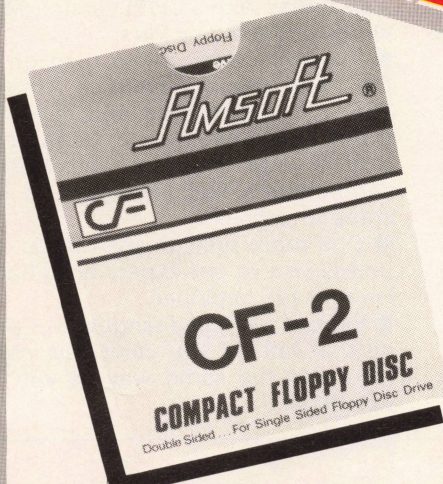


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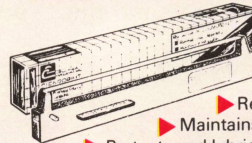
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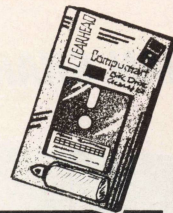
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LOOKING back over past issues I noticed that apart from skirmishes with Logo and Forth we've always concentrated on Basic and machine code. This isn't surprising, as the former is free and a good implementation, and the latter is the logical next step if you need more power.

However, these languages aren't the only way of making your CPC do your bidding, and variety being the spice of life and all that, I thought it would be interesting to look at the advantages – and drawbacks – of the C programming language.

I use this on my Amstrad PC because whatever language you program in has to be loaded from disc, so Basic is no more convenient than any other. When you take into account that C is far more powerful than Basic, the choice comes down to cost – you usually get a version of Basic free with a PC – and whether you're prepared to learn another language in return for the flexibility and speed C has to offer.

On your CPC, C is a less obvious option, but it does have things to recommend it:

- If you have any thoughts of becoming a professional programmer in the wider world of commercial computing, a knowledge of Basic is unlikely to impress a prospective employer. Even the tea lady and the

office cat can cobble together a few GOTOs and GOSUBs. Many professional programmers use C, and a knowledge of it will give you a head start in the job market.

- C is designed in such a way that it is difficult to write badly structured programs. You can't flit from one end of a program to the other with GOTOs, and you are forced to break the program down into logical sections, as you are supposed to. Once you get into the habit of working this way it'll improve your programming in other languages.

- C programs tend to be easy to adapt for other micros because all C implementations are written round a common core. Versions vary much less than dialects of Basic found on other machines, and learning C on your CPC would enable you to write simple programs on a PC, Atari ST, Amiga, or even a mainframe without having to start from scratch.

- With C it is possible to build up libraries of commonly used program segments. You can use these in any program by simply using their name and telling the C compiler which library to look in. Program development then becomes very rapid when you've collected some useful routines.

Sounds tempting, doesn't it? But it's not all beer and skittles, and it's only

fair to list some of the drawbacks:

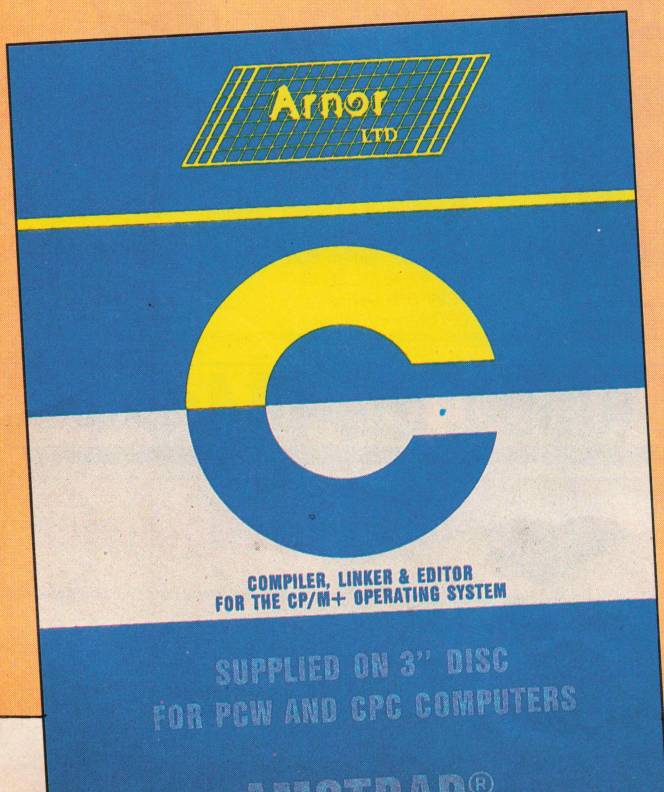
- A C package will cost you money.
- With one exception CPC versions run under CP/M. This makes graphics and sound difficult unless you know some machine code.
- The one implementation that runs under Amsdos – Hisoft C – is slightly non standard and lacks floating point arithmetic. Also, I don't like the program editor. On the plus side Hisoft C also comes with a CP/M version which works under 2.2 or Plus.
- The only version I've tried on the CPC with floating point is Arnor C. This is CP/M Plus only, and its floating point routines are no faster than Basic's. Also, the system has rather a cumbersome feel, though it is very comprehensive.
- C is more difficult than Basic, and unless you've got experienced help it isn't for the beginner.
- Being a compiled language – more on that later – you can't see instant results in the same way as you can with Basic.

The nature of C

Having seen the pros and cons, let's look at the language itself. The fundamental difference between C and Basic is that C is compiled whereas Basic is interpreted. The Basic inter-

Now just C here

IAN SHARPE gives a glimpse of the pro programmers' language



preter in your CPC is a machine code program. When you run a Basic program the interpreter works out what commands each line contains then calls up machine code subroutines to deal with them.

Put another way, the line has been interpreted into something the Z80 microprocessor at the heart of your micro can understand. If a line executes 1000 times during the course of a program, it is interpreted 1000 times. This interpretation process imposes a time overhead which is why Basic is so sluggish.

C takes a totally different approach. You write your program in a text editor or word processor, and save it as a text file. At this stage the file means as much to the CPC as a letter to Grandma. The C compiler takes this and works through converting it into machine code, the end result being a program which has been interpreted once and for all. This is not as efficient – short or fast – as what would be written by a skilled machine code programmer to do the same job, but it is still faster than Basic, and usually quite adequate.

If you leaf through your Basic manual you will see around 170 keywords listed. C has just over 30, and these are mainly concerned with program flow – loops, IF...THEN statements and so on – and setting up variables. There isn't a keyword to print on the screen or one to get a character from the keyboard. These may seem like glaring omissions, but in fact they are the source of C's power.

I said that you can build libraries of useful routines. In C these self-contained blocks of program are known as functions, and with every C compiler comes a library. In it are functions to print to the screen, read the keyboard and all the other things you'd expect. The library functions substitute for Basic keywords, and when you build a library the functions in it are used in programs in the same way as keywords in other languages.

The consequence is that you can end up with libraries containing literally thousands of functions, which makes Basic look like the guy who gets sand kicked in his face. The more fundamental functions like screen printing have the same names and work in the same way in all C compilers, so to that extent programs easily transport from one system to another.

My £30 Zortech C for the PC doesn't have graphics support but has more functions than Locomotive Basic has keywords, and that's just the core of a system which is added to every time I write a program. More expensive compilers are supplied with even more than that.



C in action

Here's a typical C program.

```
/* Trivial C program */

#include <stdio.h>

main()
{
    int i;

    printf("I'm going to print\n");
    printf("the numbers 1 to 10\n");

    for(i=1; i<=10; i++)
        printf("%d\n",i);

    printf("Finished!\n");
    message();
}

message()
{
    printf("Hi! I'm the function\n");
    printf("MESSAGE()\n");
}
```

The first line is a comment, just like a Basic REM. A C comment can span several lines, so as well as telling the compiler where it starts with `/*` we use `*/` to show the end.

Next the compiler is told to look in the library file `stdio.h` for the definitions of functions it can't find in the program. All C programs are made up of functions, and execution always starts at the one called **main**. The other function defined in this program is called **message**.

The first line in **main** tells the compiler that in this function we are going to use a variable *i*, and it will be an integer – a whole number. **printf** is the standard function to print to the screen, and it is defined in `stdio.h`. The `\n` at the end of the text is how we tell a C compiler we want a carriage return.

The next bit sets up a loop with *i* given an initial value of one. The loop continues while *i* is less than or equal to 10, and for each cycle of the loop *i* is incremented by one. The use of `++` as in `i++` is the same as `i=i+1` in Basic. Indeed, you can do that in C too, but `i++` is quicker and neater. As a matter of interest, if we had wanted to add

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◀ From Page 33

three to *i*, C accepts *i=i+3*, but *i+=3* does the same job more elegantly.

A loop in C only executes the single statement which follows the FOR line, the end of a statement being shown by a semi-colon. If you want more than one statement in your loop you have to lump them together within curly brackets:

```
for (i=5; i<=11; i+=3)
{
    printf("Counter=%d\n",i);
    printf("More than one\n");
    printf("statement\n");
}
```

The %d in the string tells **printf** to look for an integer to put in that position. In this case the integer is whatever value is in *i*, and is followed by a carriage return.

After printing *Finished!*, the program comes to the function call *message()*. This is like doing a GOSUB to the block of program defined in curly brackets under *message()*. After it has done its job it hits the closing curly bracket and returns to **main**. Once back, there's nothing more to do in **main**, so the program is complete.

It's important to realise that the only functions which are executed are called up from *main*, or are called

from functions called from **main**, and so on. Control does not drop through from the end of **main** to the next function; once it hits that bottom curly bracket the story's over.

If **message** had been something useful, I could have put the definition in a file called, for instance, *mylib.h* and by adding:

```
#include <mylib.h>
```

to the start of the program the compiler would have fished the definition out when required. **message** would then be as much a part of my version of C as **printf**. Powerful stuff, is it not? And that's barely scratched the surface.

Which C?

Although more are available, the two compilers I've tried on the CPC are Hisoft and Arnor.

Hisoft has a lot going for it – it's not too expensive and comes with Amsdos and CP/M versions. The Amsdos libraries include full sound and graphics support. The other side of the disc is OK with CP/M 2.2 and includes functions to access GSX graphics with Plus. The CP/M text editor is WordStar compatible, which means you'll love it or detest it. The Amsdos editor is similar to Basic's, which makes you feel at home but does tend to restrict clear layout.

There are some non-standard features which, with the exception of no floating point, don't pose any

real problems. If you can live with integer-only arithmetic, Hisoft C is a very good buy.

Arnor C is a different beast. As a C implementation it is more complete than Hisoft, including floating point arithmetic and trig functions. It is CP/M Plus only, so you're restricted to the CPC6128 and PCW series. There's no GSX support, but if you know a little machine code and don't mind tying your CP/M programs to the CPC you can easily get at the firmware calls to provide graphics functions.

The text editor is Aped, which is excellent. The edit-compile-edit cycle is slower with Arnor C than with Hisoft, but how frustrating that is depends on you.

CPC COMPUTING

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THE FORM ON PAGE 53**

AS you will have seen from the news story in last month's issue, Graduate Software has released version 2.3 of CP/M Plus on rom. This is a development of the original version which I reviewed in the June issue, and has made an already good product superb.

You may now enter CP/M conditionally with the command `!OP`, which provides you with a list of programs on the disc in the default drive. Pressing the spacebar steps through the files in the directory, and a quick dab at Return runs the program.

Should you have inserted the wrong

drive A will be acted upon, giving auto-boot capability in a fraction of the time normally associated with CP/M start-ups.

The only minor bug in the review copy concerned Turbo Pascal. V2.3 of the roms is none too happy with this program, as it uses illegal calls. However, Roger Bamkin – Graduate's MD – told me that this has been rectified in the latest roms, so it should present no problems.

If you regularly use CP/M Plus and didn't order these roms when last they were reviewed, you should be ashamed of yourself. If you don't go

out and get a pair now, I despair for your powers of perception!

This CP/M user has ordered his, and will be using them every day by the time you read this. I'll also have had some of my favourite files blown on to accessory roms. Might I suggest you do the same? If you did buy version one, an upgrade is well worth the extra £9.90, and will give you a host of new facilities.

Dave Dorn

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So what's new?

TONY KENDLE and DAVE DORN bring you updates on two products reviewed recently

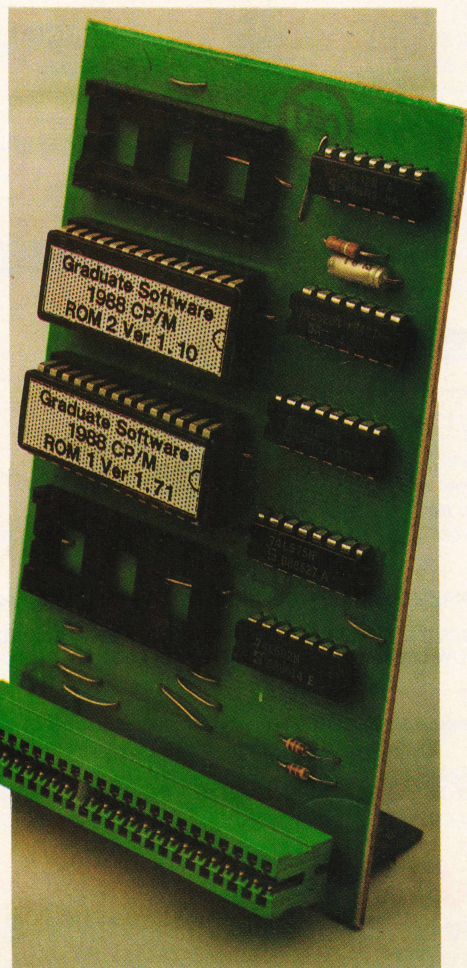
disc or found that the `.com` or `.sub` file you require isn't there, hitting Escape twice returns you to Basic with everything intact. If you wish to continue with a Basic program which was running when CP/M was called, you just need to hit a key because `!OP` seems to have the same effect as pressing Escape once.

I find this invaluable, as I often manage to put the wrong disc in the drive. It's not the only useful feature however, as V2.3 also allows accessory roms to be used under CP/M. What this means is that you can have, say, `nsweep.com` blown on to rom and it is available for instant loading. The pre-production accessory rom that Graduate supplied for review came with `nsweep`, `format`, `pcw`, `run`, `unera`, and `d`.

`Nsweep` is well known to CP/M users, while the others provide functions that are often useful, but necessitate tedious loading from disc because they are not built-in transients. `pcw.com` is useful if you need to read PCW format discs, `unera` is self explanatory, and `d` gives an extended disc directory similar to `dir.com`, the transient version of DIR.

`Format` works in exactly the same way as the Utopia bar command of the same name, and again is very useful. No more messing about with long-winded `diskit3!`

Coming back to the two main roms, Graduate has now built in support for the KDS 8 bit printer port, a facility I was, unfortunately, unable to test. As before, any `profile.sub` file on disc in



GENERAL Ledger is the third in the series of accounting utilities for small businesses. If you read my review of Small Traders' Pack in the September issue, you will already know that these are excellent value, well suited to small companies and one man operations. They cover all the essential operations for very little outlay.

In common with earlier releases, in some ways the new programs are rough and ready, managing to combine ease of use with ease of misuse. The manual warns that General Ledger will not be perfectly polished because error trapping and foolproofing uses up room, thus reducing valuable data space.

There is a limit as to how far SD could push this argument when you consider how much has been squeezed into Masterfile, for example. However, the quality of programming has improved over earlier products, and I was beeped at for no obvious reason on fewer occasions.

Once or twice the program froze, making me think it had crashed, but this was either the result of garbage collection or internal calculations. The manual does forewarn you of possible delays, but underplays their length and irritation value.

There is a strong argument that anyone who does not know what a ledger program does should not consider buying one, but in brief it records the company's financial incomings and outgoings and works out such things as the profit and loss account and VAT due.

Among the outgoings will be regular expenses such as electricity bills, or capital expenditure such as the purchase of a new computer.

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◀ From Page 35

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- | | |
|------------------|--------------------|
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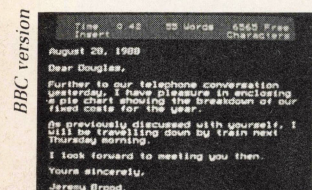
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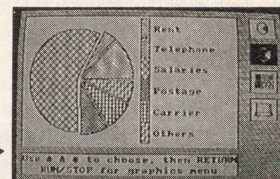
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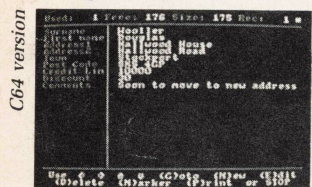
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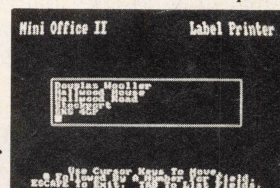
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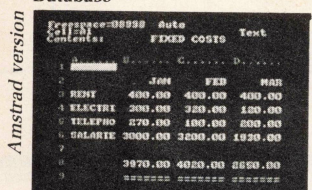
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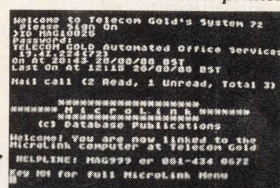
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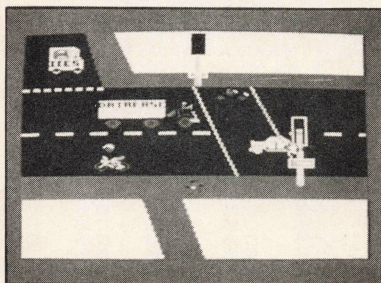
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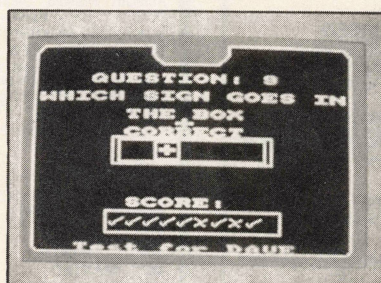
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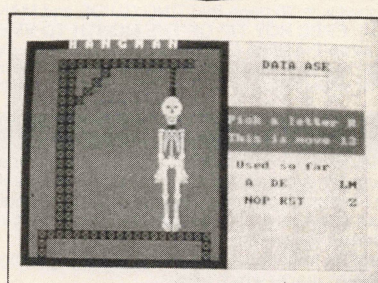
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TO ORDER YOUR PACK, PLEASE TURN TO THE FORM ON PAGE 53



ADVENTURE

The hassle with those home-brews

Gandalf on the world of adventures

A LETTER from Stephen Keeling has raised some interesting points about the problems facing authors of home-brew software. Stephen has sent an adventure to several software houses only to have it rejected on the grounds that it is text only, or the company concerned simply doesn't want adventures.

The trend these days seems to be towards graphic adventures which, to my mind, is a shame. I don't think you can beat evocative text, and quite often pictures are used to disguise weak gameplay.

In your search for a company to publish your game, Stephen, I suggest you do a bit of market research and find out which software houses regularly publish adventures, particularly text-only ones. Having said that, it would have been nice if the companies Stephen contacted had given their opinion of his game rather than an essay on the state of the market.

Stephen also asks what I expect from an adventure submitted to me for review. When I review material by an established software house I expect a professional package. That is an adventure which is bug-free, without spelling mistakes, with clear documentation, and worth its price.

I expect less in most areas from a game submitted by a reader – but more in one. Most home brewers are lovers of the genre, and I expect this to show. I accept the odd bug on the understanding it will be cured before the game is offered for sale.

Spelling mistakes, as any writer will tell you, can sometimes be missed however many times you check your work, so I tend not to allow these to cloud my judgement – provided there aren't too many. That said, if you're preparing the text with a word processor there is no reason why it shouldn't be run through

a spelling checker before being incorporated in the program.

I expect the documentation to be clear and understandable, but it matters little whether it is printed, a text file on disc or tape – though make sure it is saved as an Ascii file – or even hand-written.

The game should load easily, so a disc version is preferred, and usually serves to reinforce the writer's sincerity. Finally, the one thing that always helps but is rarely enclosed – a map and solution.

I hope that helps anyone thinking of producing an adventure. And yes, I would very much like to see the game you have written Stephen. If it's up to scratch, we'll review it.

On to a few of your problems. An adventure that seems to elicit regular requests for help is **Seabase Delta**. Paul Old has managed to get into the travel car but is unable to start it. *Insert the card from the dead body after wearing the belt.*

The excellent Interceptor game **Jewels of Babylon** has Marc Jacobs reaching for pen and paper. *Give the watch to the cannibals and kill the octopus with the spear.*

Thanks to the timely arrival of a solution from Chris Muff, I can answer D. Hares' request for help in opening the sluiceway in **Aftershock**. *Fill the bottle with oil from the wrecked tanker, fit the handle to the mechanism, lubricate it, then open the sluiceway.*

Paul Whittingham would like to know how to make the bomb in **Nova**. I have a solution to this adventure, but Paul hasn't given enough information for me to help him.

My thanks to Darren Farlow for his very flattering letter, to Inigo Dunkley for his solution to Spellbound, Danny Batroyd for his to Dracula parts I and II, and to Chris Muff for Aftershock.

Turn to Page 40 ►

An end to Necris Dome – and farewell Frankenstein

Necris Dome – A complete solution by Darren Stephens

Travel East and examine the corpses. Get the ice then move West. Search (to reveal an open hatch above you), go up, North then drop the aerosol. Move West, (you now teleport) then West again. Drop the green, take and examine the shell then wear it.

Get and examine the helm. Go East twice, South twice, East then North. Examine the vat – it contains gallons of deadly fluid. Fill the helm and travel East. You see another mandroid. Throw the acid – the mandroid screams and clutches its face. Search the mandroid then look. It is burning and you can see red and pink trans-rods. Take them, then move South, West (you teleport again), North, East then South.

Examine the lockers – 20 of them, with differently coloured doors. Open the white one and look inside to find and get the white trans-rod. Travel North then West – you teleport. Throw the ice to neutralise the barrier to the West. Head West and you now see the dreaded arch-mandroid. Examine him. He appears to gather his energy through a silver pipe which connects him to vast banks of machinery.

Shoot the pipe with the At-Lan gun (to disable him), search him (to find a key), get and examine the key. It is golden with a flame symbol on it. Go West, and

search the centre. This is the power centre for the whole dome, and is dominated by a large reactor which is controlled by a security key. Insert the key, shoot the generator with the At-Lan gun. It is now de-activated and an explosion is imminent. Move East, drop the white trans-rod, North, East then West seven times. Get the oxy then move West twice and go into the casket. Game completed.

Final message:

"Well done! The dome is ripped by a huge explosion but you are safely jettisoned into space. The exchanger gives you adequate oxygen and the homing device is functioning. Your mission has been a total success".

Additional note

There are energiser pads at some locations in the dome which will eventually drain all your energy. To disable them, get the circuit diagram and insert it to access a panel. Then push the four buttons to switch off the pads.

Frankenstein – Part III of a solution by Graham Wheeler

Type in *Prometheus* (the name you saw on the diary and the end of Part II). Dr. Frankenstein reads the monster's story and you become the monster. You arise in a dark room knowing nothing.

Look around, and think. You realise the man fears you because you are different. Examine the bench, get and examine the book. You can't understand it but feel that it is important. Examine the sink then the water. You like the feel of it. Drink then look into the water. You see a monster – you open your mouth, the monster opens its mouth, and you then realise the monster is you. Move North and listen to the couple. They say the word love. Watch them, and you see them press their lips together and look happy.

Travel West. Something hits your shoulder – it comes from a man with a black tube. Run East – you wander until you reach and enter a cave. Move East three times then South. Your arm hurts.



HALL OF FAME



Examine it – the wound is festering. Move East and North, bathe the arm (it does not help), search the shore, get the salt and rub it on the arm. You black out but when you come round the wound has nearly healed.

You see a woman in difficulties and save her. As she comes round you press your lips to hers to show affection, but she is frightened of you. You accidentally kill her as you try to calm her. You go to the cliff. Move West twice then North. Look around, examine the bushes, and take and smell the strange fruit. It smells bitter and acid. Get and smell the peculiar fruit. It smells sweet and pleasant. **Note:** Either of the fruits can be poison depending on their smell.

Eat the peculiar fruit – you are not satisfied – travel East then North. You strike off into the forest and learn from the creatures what is safe to eat. Go East and you see dwellings to the North and South. When you try to go towards them you are prevented by their resemblance to the place where you were hurt. Go West twice then North (you see a dwelling), listen (you hear raised voices), East, look around. Through the bushes you see the door of the cabin.

Wait. Men come out of the cabin carrying guns – they are looking for you. Move North, look around (you see a shed), examine the shed (the door is closed), open the door carefully (you don't make a noise). Enter West then look around. You see gaps in the timber.

H-E-L-P

CAN anyone tell Danny Batroyd how to get the Clingons out of the minefield in **Smashed**? Since this game is new to me, some general information about it would be helpful.

A game that is puzzling two adventurers is **The Colour of Magic**. Inigo Dunkley would like to know what to do with the biscuits and bottle and G.A. Goss would like general help. Someone else that needs broad help is Patricia Naylor who has written in about **Arkham Manor**.

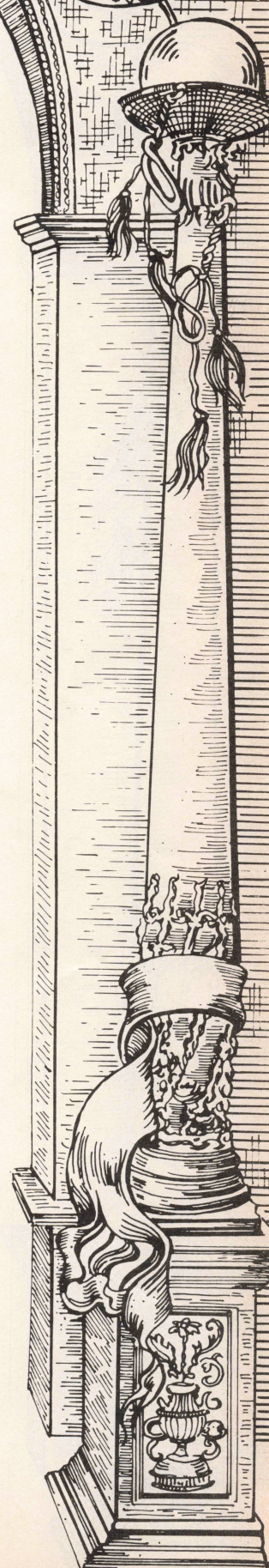
Paul Whittingham is stuck in a game that I haven't had the opportunity to play, **The Sydney Affair**. Paul has two statements and the ballistic and autopsy reports, but cannot progress any further. Can anyone help him out?

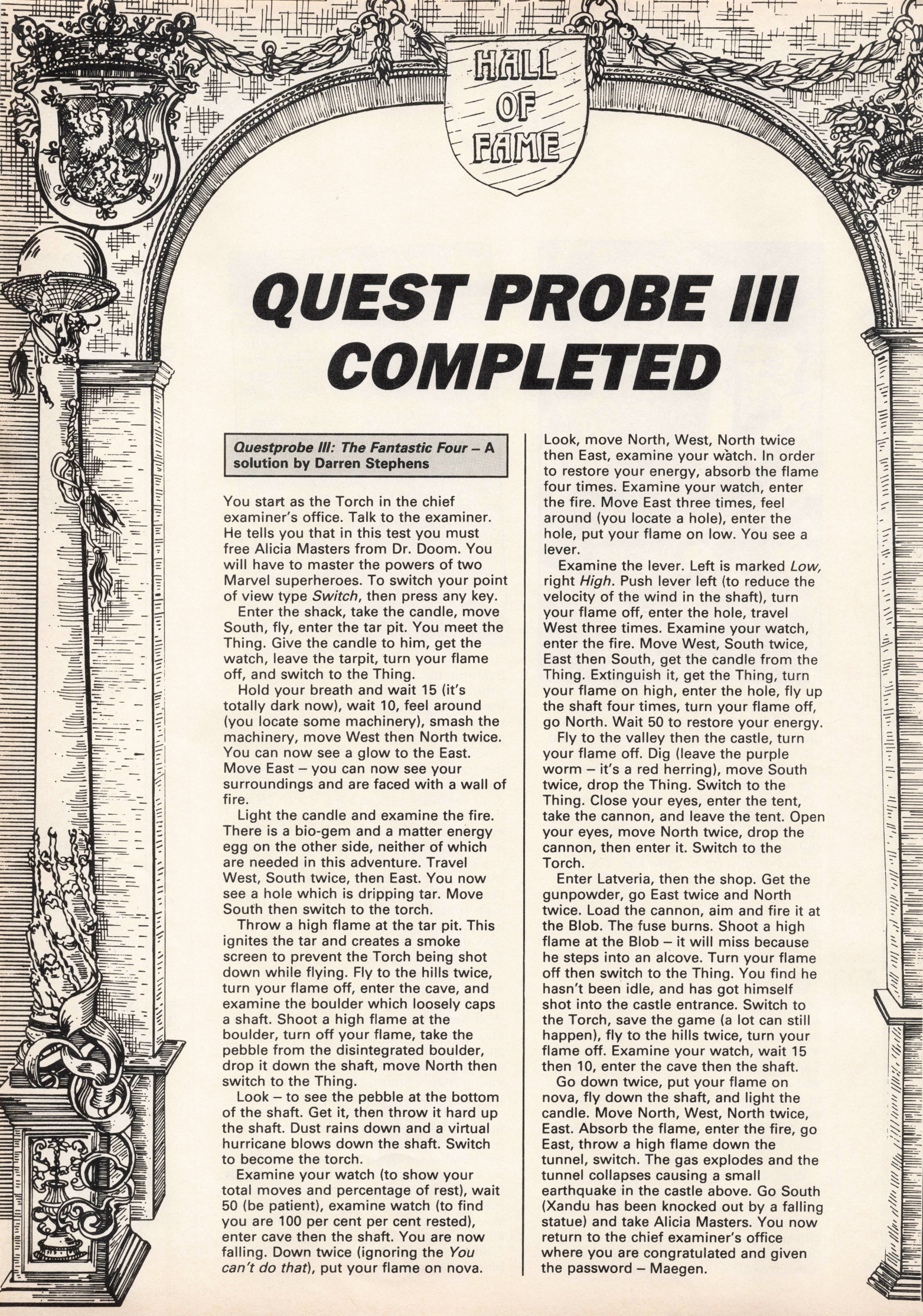
Examine the gap and you see into the cabin – a blind man and a couple are there. The young man is showing the woman how to make and understand marks on paper.

You rest. Examine the gap and you see the couple are leaving. Examine the gap again – the blind man is alone. Open the door carefully and go East, South, West then North. You enter the cabin. Look around, and you see the blind man who is friendly and believes your story about the killing. He warns you to hide again as the couple are returning, so you return to the shed. Examine the gap. The young man continues to teach the woman. Examine the gap again – the cabin is now dark – and you hear the sound of a lion outside the door.

Break the strange fruit and slide a segment under the door. The lion eats it and is poisoned. The hunters approach. Wait until they come and collect the lion, and leave. You are told that you then spend several months in the shed, avoiding capture, learning from the young man's tuition of the woman, and visiting the blind man when they are out.

Read the book – at last you can read the truth about your creation. You are horrified and decide to tell your story to the blind man. Open the door carefully, move East, South West then North. While you are with the blind man, the young man returns and attacks you with an axe. You take it from him and, in a blind rage, kill him with it. The game ends, Dr. Frankenstein finishes your story and is filled with sadness.





HALL OF FAME

QUEST PROBE III COMPLETED

Questprobe III: The Fantastic Four – A solution by Darren Stephens

You start as the Torch in the chief examiner's office. Talk to the examiner. He tells you that in this test you must free Alicia Masters from Dr. Doom. You will have to master the powers of two Marvel superheroes. To switch your point of view type *Switch*, then press any key.

Enter the shack, take the candle, move South, fly, enter the tar pit. You meet the Thing. Give the candle to him, get the watch, leave the tarpit, turn your flame off, and switch to the Thing.

Hold your breath and wait 15 (it's totally dark now), wait 10, feel around (you locate some machinery), smash the machinery, move West then North twice. You can now see a glow to the East. Move East – you can now see your surroundings and are faced with a wall of fire.

Light the candle and examine the fire. There is a bio-gem and a matter energy egg on the other side, neither of which are needed in this adventure. Travel West, South twice, then East. You now see a hole which is dripping tar. Move South then switch to the torch.

Throw a high flame at the tar pit. This ignites the tar and creates a smoke screen to prevent the Torch being shot down while flying. Fly to the hills twice, turn your flame off, enter the cave, and examine the boulder which loosely caps a shaft. Shoot a high flame at the boulder, turn off your flame, take the pebble from the disintegrated boulder, drop it down the shaft, move North then switch to the Thing.

Look – to see the pebble at the bottom of the shaft. Get it, then throw it hard up the shaft. Dust rains down and a virtual hurricane blows down the shaft. Switch to become the torch.

Examine your watch (to show your total moves and percentage of rest), wait 50 (be patient), examine watch (to find you are 100 per cent per cent rested), enter cave then the shaft. You are now falling. Down twice (ignoring the *You can't do that*), put your flame on nova.

Look, move North, West, North twice then East, examine your watch. In order to restore your energy, absorb the flame four times. Examine your watch, enter the fire. Move East three times, feel around (you locate a hole), enter the hole, put your flame on low. You see a lever.

Examine the lever. Left is marked *Low*, right *High*. Push lever left (to reduce the velocity of the wind in the shaft), turn your flame off, enter the hole, travel West three times. Examine your watch, enter the fire. Move West, South twice, East then South, get the candle from the Thing. Extinguish it, get the Thing, turn your flame on high, enter the hole, fly up the shaft four times, turn your flame off, go North. Wait 50 to restore your energy.

Fly to the valley then the castle, turn your flame off. Dig (leave the purple worm – it's a red herring), move South twice, drop the Thing. Switch to the Thing. Close your eyes, enter the tent, take the cannon, and leave the tent. Open your eyes, move North twice, drop the cannon, then enter it. Switch to the Torch.

Enter Latveria, then the shop. Get the gunpowder, go East twice and North twice. Load the cannon, aim and fire it at the Blob. The fuse burns. Shoot a high flame at the Blob – it will miss because he steps into an alcove. Turn your flame off then switch to the Thing. You find he hasn't been idle, and has got himself shot into the castle entrance. Switch to the Torch, save the game (a lot can still happen), fly to the hills twice, turn your flame off. Examine your watch, wait 15 then 10, enter the cave then the shaft.

Go down twice, put your flame on nova, fly down the shaft, and light the candle. Move North, West, North twice, East. Absorb the flame, enter the fire, go East, throw a high flame down the tunnel, switch. The gas explodes and the tunnel collapses causing a small earthquake in the castle above. Go South (Xandu has been knocked out by a falling statue) and take Alicia Masters. You now return to the chief examiner's office where you are congratulated and given the password – Maegen.

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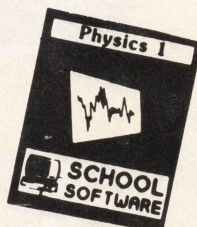
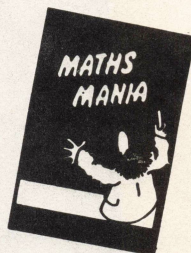
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The land of Shades

*by someone who has
been there and survived*

I AM Whirlwind: I have been sent to tell you
of Shades, a wide land wherein lies great
treasure - and great danger too, if you
wander around with your eyes closed and no
thought of any worth in your head.

To start you must know how to enter the
land. When you first play, you will have nei-
ther rank, honour nor any points. You will be
a Novice and utterly useless. Therefore
speak sweetly to others, and do not puff up
with boasting, and maybe they will help you.

But if they will not, you had better know
how to get around and get treasure. You can
move in many ways by typing GO NORTH,
GO UP, GO SOUTHWEST and all other direc-
tions. But you can also enter N, U and SW,
which is quicker. OUT works from nearly
everywhere and is good for retracing your
steps if you get lost.

At first you will wish to stop and gawp at
the wondrous things, and truly the descrip-
tions of locations in Shades are lengthy and
full of interesting information and clues.

But if you type BRIEF you will see only the
name of your current location - you can see
a full description by typing LOOK instead.
This is useful, for you will move around
quicker, and not have to cope with lots of
words on your screen when you have to run
fast from evil fighters such as Minotaur,
whose name is a byword for cutting people
into small bits.

When you find an object you must pick it
up: So type GET (object). Not all objects are
valuable: If you type GET T (for treasure) that
is a quick way to tell if the object is worth
anything. Then when you have it, type
VALUE (object) to find its worth. Take it to
the Mad King's Room, where if you drop it
you will be given points for your deed, and
may presently advance in rank and power.

The Mad King's Room is to the east of the
courtyard in the castle, so you will not miss
it. But if the drawbridge is raised you may
not enter. Therefore go south from the
drawbridge and you will find a way of low-
ering it.

That is all I can tell you for now, but I will
return in the cycle of a moon and speak on
matters of glory and honour: How to make a
name for yourself in battle, unlike the fool
Murrough, who sitteth in a safe place always
and never dares risk his unlovely skin.

Until then, may the goddess protect you.

How to access Shades using your micro, a modem
and a telephone line:

MicroLink/Telecom Gold..... key >Shades
Micronet/Prestel.....key * Shades #

The opening location in Shades

Join the quest with Lancelot

Lancelot
Level 9/Mandarin Software
£14.95 tape (No pictures)
£19.95 disc (CPC6128 or 664/464 with
ram pack)

IT beats me how Level 9 manages to keep coming up with not only good games, but original ones. This three-part graphical adventure follows the plot of Mallory's *Morte D'Arthur* fairly closely, from Lancelot's first appearance at Camelot to the quest for the Holy Grail.

Your task is to play Lancelot and, ultimately, find the Grail. You begin on a road near Camelot and are soon jousting with a mysterious knight who turns out to be King Arthur himself. At the end of the fight he asks you to join him at his castle the next day.

Journeying on to Camelot you should ignore Sir Kay and seek Merlin, your mentor. He will provide shelter for the night, and an examination of his library will prove rewarding.

The next day sees you finding Arthur and learning of the task you need to complete to earn the title of Best Knight. It also brings your first fateful meeting with Queen Guinevere.

You now have to explore the surrounding countryside. Despite the availability of commands such as *Go to*, *Find* and *Run to*, I found it helped to make a map.

It won't be long before you meet the Damosel Maledisant. She will enable you to perform your first

chivalrous deed and, in so doing, also meet your first serious challenge. Defeating Sir Phelot is less a case of battling it out than using what is available to you.

The Lady Lyonesse now has a more serious problem for you to solve, and it is necessary to seek her out once more. The path to her door is fraught with danger, but if you act in a manner befitting a knight of the Round Table you will win through. On reaching the lady you will find the solution is close at hand.

You now have a retainer in the Red Knight, and a companion – the Damosel Maledisant. The former will be useful in completing those tasks which you are unable to tackle unaided, and the lady has her own purpose to fulfil.

She can safely be ignored except when she offers advice, which you would do well to listen to. Several of the problems you encounter require you to have control of three retainers, so your mission now is to free another knight.

The briers that you have doubtless seen on your travels can now be overcome with a concerted effort, though at first your only reward seems to be imprisonment, and guile the only means of escape.

Morgan is not impressed with your efforts but the maid is an obvious target and, once you have her on your side, you are in a position to free Sir Gawain to become your second retainer. You are now equipped to find and release all the knights being held captive around the countryside.

Aside from the problems already

mentioned, you will have to defeat a giant, steal a harp, kill someone invisible, persuade the invading Sessiones to retreat from Tintagel, defeat a magical knight, find King Pellam of the marshes, and release nine knights from Sir Turquin's dungeons. The latter problem is one that caused me no end of difficulty.

With a score of about 580 out of 1000 you can now go forward to the final part of the game.

I am very impressed with Lancelot. When I try to analyse why, I find it is not because of the complexity of the puzzles – some are easy, others push lateral thinking to the limits – nor is it because of the quantity of the problems.

No, it has to be the evocative text. Lancelot positively reeks of atmosphere, and it has that elusive quality which makes you return time and time again until you complete it.

Level 9 has incorporated many of the features we have come to expect from them. The commands mentioned above aside, Ram Save,

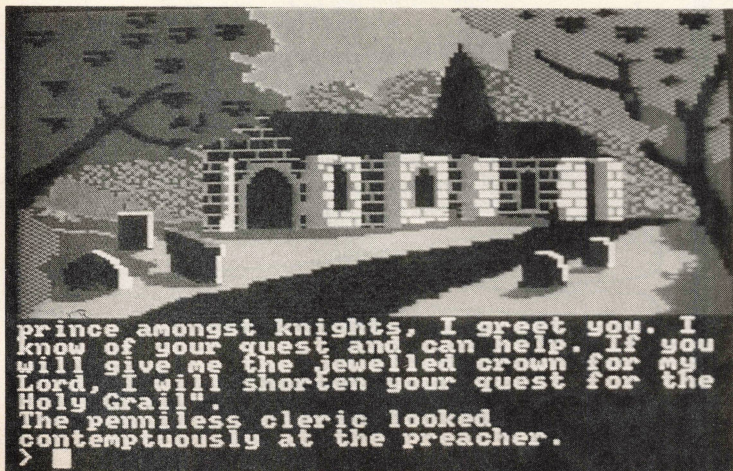
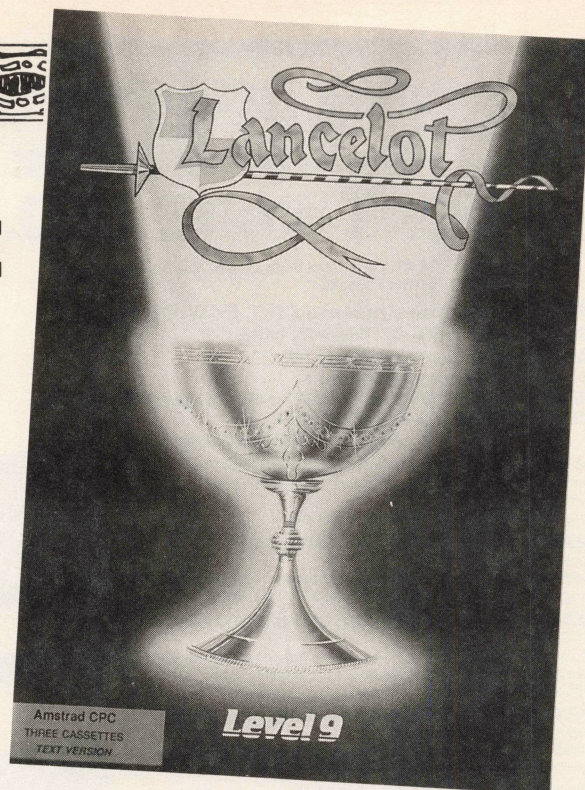
Restore and Undo are the most useful, though cassette users lack these facilities and have to avail themselves of a rescue service provided by Merlin.

The graphics, too, are much better than in previous games, and although I did eventually turn them off, I was impressed with their quality.

The protection system has also been made easier in that you are now only prompted to enter a word from the accompanying booklet when you try to reload a saved game. This is a satisfying compromise, and works well.

If all of this were not enough, there's a competition where you can take part in a real life quest for a valuable replica of the Grail. Overall, an amazingly well crafted game, and one that I have no hesitation in recommending.

Gandalf



Lancelot positively reeks of atmosphere

Presentation 97%

Well up to Level 9's usual high standard.

Atmosphere 100%

It's the nearest I'll ever get to the real thing!

Frustration factor 97%

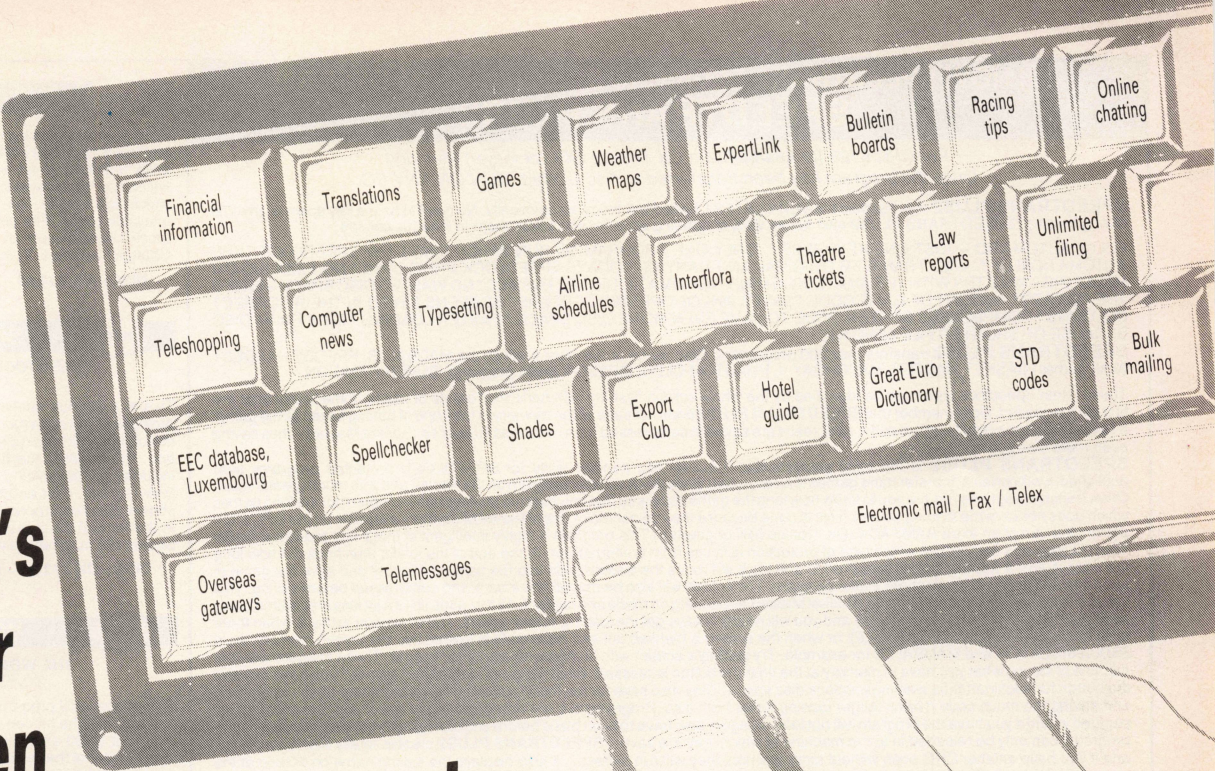
The puzzles are extremely well balanced, the easier ones giving a fine introduction to the harder problems to come.

Value 96%

I'm not renowned for recommending packages in this price range, but this is one game that is well worth the money.

OVERALL 98%

A masterpiece!



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These latest Speedlock types can be identified by the whole screen flashing with horizontal bands of colour immediately after the first file has loaded. Do remember that **SPEEDTRANS PLUS2** does not save all the memory in the hope of having saved all the game. It saves exactly the right length of code. All screens are saved in compressed form - some as little as 4K (Basket Master) - thus saving even more disc space.

SPEEDTRANS PLUS2 is the most sophisticated Tape-to-Disc transfer utility for SPEEDLOCK protected programs ever published. It will certainly transfer more games than any other Speedlock transfer program on the market and with much greater ease. Other transfer programs require you to know how long the game code is so that you may run an alternative program for the long games which does not save the loading screen. This is done because they do not make use of the extra memory available on the CPC 6128 or from the use of an extra RAMPACK (DK Tronics 64K or greater.) This program is highly intelligent in that it first reads the loader from the tape and establishes which type of protection is in use from 6 alternatives. At the end of the load it then finds out how long the code is and if it is too long to be saved to one file it will move the excess code into the banked memory and save the game in two parts and write the appropriate loader program. The screen will also be moved into a bank and compressed before saving. This can mean screen files as small as 4K (Basket Master) depending on mode and content. All this adds up to a lot less disc space being used than with other transfer programs and you will nearly always get the loading screen saved. The exception to this is when there is no loading screen (as in SCRABBLE) or when the screen is blanked out and more code is loaded into the screen memory, as in BMX SIMULATOR and MADBALLS for example. Try getting a screen with Multiface or any other imager. These imagers are only capable of saving what you have in memory at the time the button is pressed. What happens in multi part games? you have to press the button for each part thus wasting precious disc space. They also save far too much code and therefore waste even more space and saving too much code means longer loading times from disc. Programmers are now checking to see if you have an imager plugged in and if you have the program will not load. Imaginers also have to be in place before you can reload your program and saved programs can only be reloaded in to the machine in which they are saved. **SPEEDTRANS PLUS2** creates totally stand-alone files and if you have another CPC even without extra memory they will run perfectly. It also displays the saving name on screen at the start of the load will all except the very latest games. In all cases the disc saving name is displayed while the save is carried out. To run the transferred game just RUN this name. Another intelligent feature of **SPEEDTRANS2** is that every first thing it does is to find out which drive it is in. This means that if you have a two drive system you may run the program from drive B by typing RUN "B:DISC" or B:RUN"DISC. However the saving will ALWAYS be to DRIVE A so with a single drive you must change the disc when prompted on screen

DISC:- UK £14.99 - EUROPE £16.25 - REST OF WORLD £17.00

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Maxam 1 1/2 "NEW"	N/A	24.50	N/A	25.75	N/A	26.50
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This utility will transfer a number of FIREBIRD programs from tape to disc automatically including most opening screens in full colour. **FIRETRANS** will work equally well from tape but will be more convenient to use if converted to disc with **SAMSON/Transmat**. It will transfer WILLOW PATTERN, RUNESTONE, CHIMERA, GUNSTAR, PARABOLA, REALM, SPIKY HAROLD, BOOTH, DONT PANIC, GUNFIGHT, STARGLIDER, NINJA MASTER, HELICOPTER, and some versions of THRUST, HARVEY HEADBANGER and BOMBSARE.

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NEW

COMPACTOR

NEW

COMPACTOR will allow you to load a standard 17K screen, set the mode, border and ink colours and then save it as a compressed screen containing its own mode and ink colour information. Most screens compact down to an average of 9K which is an enormous saving on disc space. Loading time of compressed screens is also proportionately reduced

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NEW

SHAREPLAY

NEW

THE STOCK MARKET SIMULATION
(ALL CPC's)

This is a serious educational program for 1 to 6 players and provides all the enjoyment of playing the stockmarket without any risk of personal bankruptcy!! Each player can buy and sell shares and the target is the first to reach £1,000,000. The program includes a stockholding portfolio listing the shares purchased, their number, cost and market value. Bank balances are also shown. Graphical representation of market fluctuations are given in the form of a bar graph. Also included is a high score table. Scores are automatically saved at the end of each session.

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NEW

WORDSEEK

NEW

THE WORDSEARCH PROGRAM
(ALL CPC's)

This educational program will tax even the most agile mind. The aim is to find the hidden words in a 15 by 15 puzzle within a set time limit of 30 seconds. The time limit is extended for every correct letter of the current word found. You may create your own puzzle consisting of up to 10 words which can be saved to disc and used at any time. You may only retain one puzzle at a time but if you choose not to use your own puzzle then the program will randomly select one from the library of 50 on the disc. All of the puzzles in the library are made up of 10 words each consisting of 1x8 letter, 1x7 letter 2x6 letter, 3x5 letter, 2x4 letter and 1x3 letter words. This ensures equal difficulty regardless of which one is randomly loaded. The program contains a print option (for Epson compatible printers) allowing a hard copy to be made of any puzzle created. Keyboard/Joystick options are also available.

DISC ONLY:- UK £12.00 - EUROPE £13.25
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NEW

TUNESMITH

NEW

TUNESMITH is a simple to use sound utility which allows you to use the keyboard to play and record your tunes. No knowledge of music or Amstrad sound commands is required all you need to be able to do is whistle the tune you play or record. The octave and period of notes is variable and the program includes synthesiser and vibrato effects. **TUNESMITH** will save any tune as a basic file which can be RUN, CHAINED or MERGED into your own program

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SAMSON

SAMSON has been developed by us to transfer not only the normal programs but also many of today's where the code is much longer. **SAMSON** differs in many ways from other Tape-to-Disc utilities, the main differences being: * **SAMSON** retains original file suffixes (**SAMSON**.SCN will be saved as **SAMSON**.SCN) * Improved file relocation method * Elaborate Tape-read/Disc-write system which reduces Tape Motor, Slave Relay and Disc Drive Motor wear substantially. * A large reduction in tape transfer time is also achieved in all but a few cases * **NEW "SPLIT"** option for todays longer games (we will be using this option in future routines) * All file information is displayed on screen and can be echoed to your printer if needed. **SAMSON** also transfers itself to disc.

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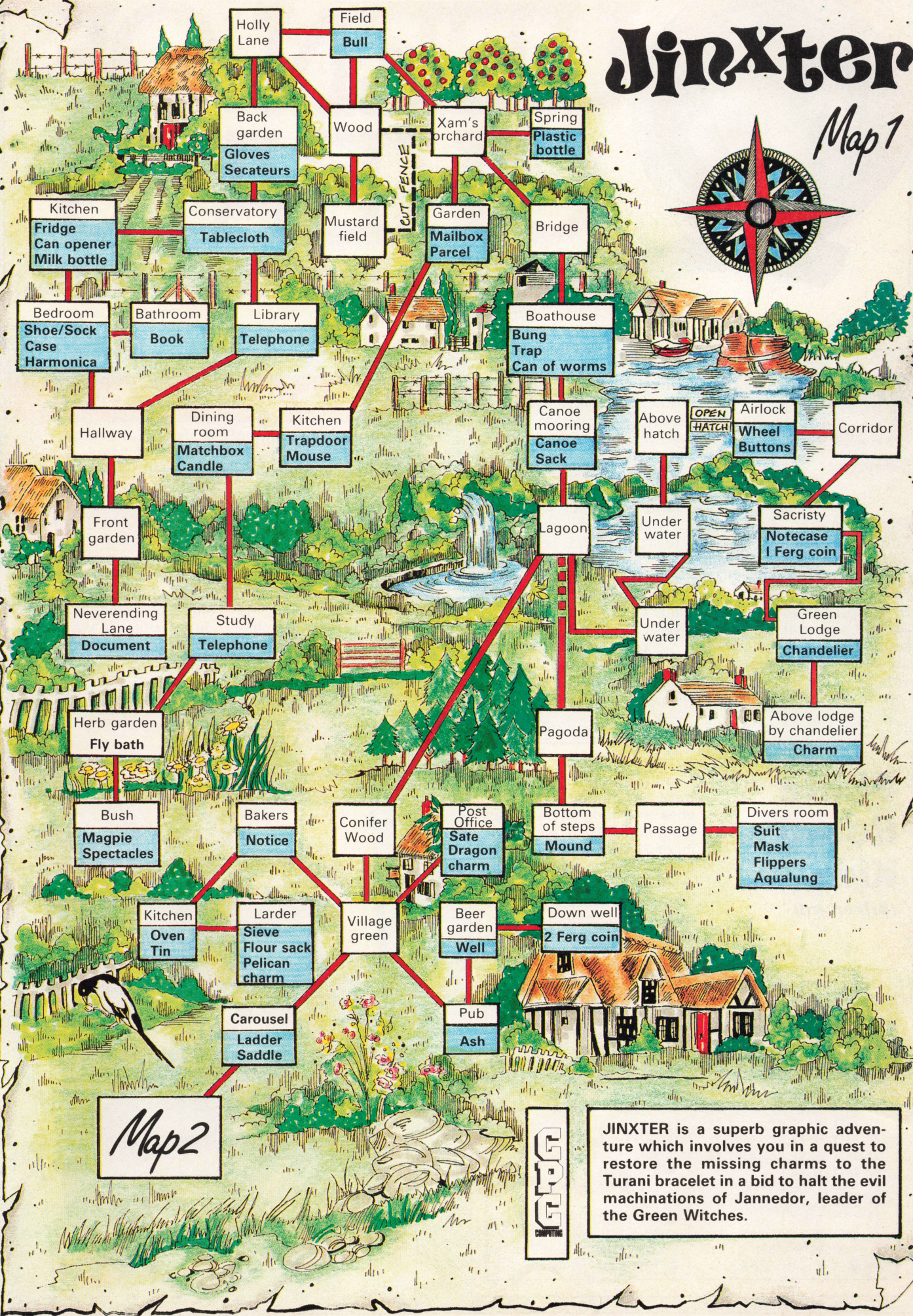
Takes all the hard work out of character designing making it a pleasure. The printer part of the program will only work if your printer is capable of DOWNLOADING and is EPSON compatible - see your printer manual. Works with 7-bit or 8-bit output (8-bit port). All the designing is done "On-Screen" so you can see exactly what you are doing. You can save your newly designed characters to disc and reload them at any time into a basic program and into most Word-Processors. The program also allows the user to redefine any or all of the keys on the keyboard. This feature will be useful for those who require an ASWERTY keyboard. The disc also contains twelve sample fonts for experimentation.

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Map 1



Map 2

CPG

JINXTER is a superb graphic adventure which involves you in a quest to restore the missing charms to the Turani bracelet in a bid to halt the evil machinations of Jannedor, leader of the Green Witches.



QUEEN OF CHEATS

Metal Army

(Players)

From Stephen Troup of Kings Lynn come some tips and the complete solution to Metal Army. To keep it short I've shown right as R, up as U, down as D and left as L. He sent a map as well, but I haven't got room for it and I think the solution should be enough.

R, R, up to highest level,

down lift on the right, R, R, down lift to first level, L, get pass, R, down to bottom level, L, down hole, move lift to first level, jump across, L, get pass, R, jump back on to lift, move to second level, jump across, L.

Get pass, R, jump back on to lift, U, R, U, L, L, U, L, D, L, down shaft, move lift up, U, L, L, up lift, get pass, down lift, R, R, U, U, left on to next lift, U, L, L, L, L, L, L, get pass, D, D, D, R, up on lift, L, get pass, R, U, U, U, down shaft next to you, D, D, D, and touch the switch. Game completed.

Take a tip or two

- Try to use the gun as little as possible.
- Don't use passes unnecessarily.
- Get as close as possible to the electrical dischargers and coolant gas exhausts. This will allow you to get past them faster.
- Where possible use the lifts to destroy mecha-noids.
- To get through the room that requires two passes to get through, you must jump left holding down Fire.
- To get into The End room, get on to the lift on the right and move as far up as possible. Fall off it, go down the shaft, open all the pass doors and fall down the hole before touching the switch.

Skate Board Kidz

(Silverbird)

I had a go on a skateboard once and ended up in stitches, and I don't mean I was laughing. You can pick infinite or 255 lives – remove the line of data above the comment for the one you don't want – and Escape becomes quit. Darren Keegan of Gate-head is the man wot did it.

```

10 ' SkateBoard Kidz
11 **** Loader ****
12 DATA F3,11,00,0D,31,FF
13 DATA BF,21,AF,BE,06,06
14 DATA CD,77,BC,EB,E5,CD
15 DATA 83,BC,CD,7A,BC,2A
16 DATA 38,BD,22,80,BE,2A
17 DATA 01,BB,22,38,BD,3E
18 DATA C3,21,B5,BE,32,0E
19 DATA BC,22,0F,BC,C9,53
20 DATA 4B,41,54,45,31,2A
21 DATA 80,BE,22,38,BD,CD
22 DATA 37,BD
23 **** CHEATS ****
24 DATA 3E,FF,32,3F,20
25 ' 255 LIVES
26 DATA AF,32,70,20
27 ' INFINITE LIVES
28 DATA 3E,C3,21,78,20,32
29 DATA 00,00,22,01,00,3E
30 DATA CF,32,F8,19,32,F8
31 DATA 2A,C3,05,20,4A,*
32 FOR i=&BE80 TO &BEED
33 READ a$:a=VAL("&a$")
34 POKE i,a:b=b+a:NEXT
35 IF b<>7205 THEN 46
36 READ a$
37 IF a$="*" THEN 40
38 POKE i,VAL("&a$")
39 i=i+1:GOTO 36
40 MODE 1:BORDER 0
41 WINDOW #1,1,30,1,3
42 WINDOW #2,1,30,3,3
43 ENV 1,1,15,1
44 ENV 2,1,13,1,2,1,1,1,0
45 ,2,6,-1,1,1,-9,1
45 CALL &BE80
46 PRINT"Data Error"
```



Crystal Castles

(US Gold)

Richard Palmer of Wrexham gives you infinite lives and a keyboard option for the tape version of US Gold's coin-op conversion. The keys are Z and X for left and right, J and \ for up and down, and Return/Enter for fire. Of course if you want to keep playing with the joystick you can do.

```
10 ' Crystal Castles
11 ' By Richard Palmer
12 ' (c) CwtA/CPC
13 DATA F3,DD,21,00,BF,11
14 DATA 59,00,CD,67,BB,21
15 DATA 2A,BE,22,57,BF,C3
16 DATA 00,BF,21,FF,AB,11
17 DATA 40,00,C3,AF,39,3E
18 DATA 45,32,4B,00,3E,99
19 DATA 32,4E,00,F3,F1,C9
20 DATA AF,67,6C,22,7B,92
21 DATA 22,7D,92,22,7F,92
22 DATA C3,00,80
23 MODE 1:CALL &BBFF
24 PRINT"Do you wish to ";
25 PRINT"use keyboard. ";
26 INPUT k$
27 k$=UPPER$(k$)
28 FOR i=&BE00 TO &BE38
29 READ a$:a=VAL("&a$")
30 POKE i,a:b=b+a:NEXT
31 IF b<>6127 THEN 45
32 IF k$<"Y" THEN 40
33 POKE i-2,&72
34 POKE i-1,&BE
35 RESTORE 46
36 FOR i=&BE72 TO &BEB3
37 READ a$:a=VAL("&a$")
38 POKE i,a:c=c+a:NEXT
39 IF c<>6931 THEN 45
40 MEMORY &2000:LOAD!"
41 POKE &39E2,&C3
42 POKE &39E3,&1D
43 POKE &39E4,&BE
44 CALL &BE14
45 PRINT"Data Error."
46 DATA 3E,C3,21,80,BE,32
47 DATA 24,BB,22,25,BB,C3
48 DATA 00,80
49 DATA DD,E5,DD,21,A9,BE
50 DATA 06,06,26,00,E5,C5
51 DATA DD,7E,00,CD,1E,BB
52 DATA C1,E1,DD,7E,01,20
53 DATA 0C,DD,23,DD,23,10
54 DATA EB,DD,E1,2E,00,7C
55 DATA C9,B4,67,18,F0,47
56 DATA 04,3F,08,13,01,16
57 DATA 02,12,10,00
```

```
10 'Pro. BMX Simulator
11 'Both EXPERT & STANDARD
12 'Catered For.
13 'Written By Steve Miles
14 '(C) CPC Computing
15 DATA F3,31,00,C0,21,30
16 DATA AC,E5,11,00,02,3E
17 DATA 16,CD,A1,BC,21,97
18 DATA BE,22,6F,AC,C9,3A
19 DATA A0,4A,B7,21,B0,4A
```



Stunt Bike Simulator

(Silverbird)

Graham Davis of Chester has pulled off a stunt with Stunt Bike Simulator. With this here poke you can have infinite attempts, points and time. If you don't want a feature, remove the line of data above the corresponding remark.

```
10 ' STUNT BIKE SIMULATOR
11 ' By Graham Davis
12 DATA DD,6E,00,DD,66,01
13 DATA 22,B6,BE,2A,38,BD
14 DATA 22,A4,BE,2A,01,BB
15 DATA 22,38,BD,3E,C3,21
16 DATA A3,BE,32,0E,BC,22
17 DATA 0F,BC,C3,00,20,21
18 DATA 00,00,22,38,BD,CD
19 DATA 37,BD,21,B5,BE,22
20 DATA 95,01,C3,5F,01,21
21 DATA 00,00,22,82,82,AF
22 'Cheats
23 DATA 21,00,00,22,ED,82
24 'Inf.Points/Time
25 DATA 32,68,83
26 'Inf.Attempts
```

```
27 DATA C3,00,80,*
28 'Leave above Line
29 FOR i=&BE80 TO &BEBB
30 READ a$:a=VAL("&a$")
31 POKE i,a:b=b+a:NEXT
32 IF b<>5746 THEN 42
33 READ a$
34 IF a$="*" THEN 37
35 POKE i,VAL("&a$")
36 i=i+1:GOTO 33
37 MEMORY &2FFF:LOAD!"stu
nt1
38 MODE 1:BORDER 0
39 WINDOW#1,1,20,1,1
40 WINDOW#2,1,20,3,3
41 CALL &BE80,8000
42 PRINT"Data Error"
```

Willy Wino's Stag Party

(Silverbird)

If you run this poke you will get strange characters during loading. Don't worry about it, because when the

game's wound in you'll have infinite lives and/or the ability to walk through moving objects and/or the ability to walk through spikes. Just remove lines

corresponding to features you don't want, and run the poke with your game tape in the deck. Dave Benson of York is the mad axeman behind this.



Pro BMX Simulator

(Codemasters Plus)

This will allow you to qualify for all rounds even though you've failed. The CPC will say Game Over, but don't believe a word of it. The poke also fixes a bug in the expert version - it allows you to play all five screens rather than the four the Oliver twins have set it to.

Rewind either side and run the poke. It will work out which version has loaded and act on it accordingly.

```
10 'Willy Wino's Stag Par
ty
11 'Dave Benson
12 DATA 2A,38,BD,22,00,BE
13 DATA 2A,01,BB,22,38,BD
14 DATA 3E,C3,21,9A,BE,32
15 DATA 0E,BC,22,0F,BC,C3
16 DATA 00,20,2A,00,BE,22
17 DATA 38,BD,CD,37,BD,21
18 DATA AD,BE,22,8E,86,AF
19 DATA C3,0E,BC,21,00,00
20 ' **** Cheats ****
21 DATA 22,39,17,22,3B,17
22 DATA 3E,03,32,97,20
23 ' Infinite Lives
24 DATA 3E,C3,32,8A,16
25 ' Remove Alien Col.
26 DATA 3E,C3,32,A7,16
27 ' Remove Spike Col.
28 DATA C3,00,01,*
29 FOR i=&BE80 TO &BEAF
30 READ a$:a=VAL("&a$")
31 POKE i,a:b=b+a:NEXT
32 IF b<>4641 THEN 42
33 READ a$
34 IF a$="*" THEN 37
35 POKE i,VAL("&a$")
36 i=i+1:GOTO 33
37 MODE 1:BORDER 0:INK 0
,0
38 WINDOW #1,1,20,3,3
39 WINDOW #2,1,20,5,5
40 MEMORY &3DFF:LOAD!"WIL
LY1
41 CALL &BE80
42 PRINT"Data Error"
```


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Kettle	2.00	-	Vixen	6.95	10.45
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In an attempt to stop him delivering presents, the Society Against Enjoying Christmas has trapped Santa in an underground dungeon. In a definite case of overkill they've packed the place with 200 sticks of dynamite, fuses merrily fizzling with Christmas cheer.

And if the dynamite doesn't give Santa a terminal hangover, the four assassins stalking him surely will! Or will they? Can you wangle Santa out of a fix? All you have to do is rush round extinguishing the fuses while avoiding the gents with the wicked smiles and blades to match.

Of course all this exercise will sap Santa's limited strength, but fortunately his chief elf has managed to smuggle in some Christmas puddings. These have the effect of restoring Santa's energy, so giving more time to complete the maze.

Throughout the dungeon are mystical doors which close after they've been passed through. To reopen one, simply collect a key. Santa is controlled by the Z,X,K and M keys, and 10 points are scored for every fuse put out. When all 200 have been seen to, a bonus score calculated from the number of unused puddings and keys is awarded.

You start with three lives, and an extra one up to a maximum of four is given every 5000 points. If the assassins catch you a life is lost, and if the timer runs out the game is over. When one level is completed you'll move on to the next. Each maze layout is the same, but the dynamite is always located randomly.

As the game is quite long – nearly 12k – I suggest you enter it section by section, and save it at regular intervals. Line 40 contains a firmware call to disable the Escape key, and the only way to quit the program is by entering Q at the title screen. If you get caught in a section of the maze with no escape, for example between two locked doors, pressing Q will abort the game, returning you to the title screen.

Finally, joystick users may like to change line 240 to:

```
240 d%=0:IF INKEY(74)=0 THEN d%=129 ELSE IF INKEY(75)=0 THEN d%=1 ELSE IF INKEY(72)=0 THEN d%=204 ELSE IF INKEY(73)=0 THEN d%=76
```



Save Santa from the dungeons of despair in PHIL LAWSON's festive arcade game

```
10 REM Dynamite Dungeons
20 REM by Phil Lawson
30 REM (c) CPC Computing
40 MEMORY &5FFF:CALL &BB48:MODE 1:CLS
50 Lev%=1:Li%=3:ENT 1,20,10,1
60 INK 0,0:INK 1,26:INK 2,15:INK 3,6
70 GOSUB 3120:PAPER 0:CLS:GOSUB 2430
80 GOSUB 550:IF PEEK(&61D8)=&1F AND PEEK(&61D9)=&C0 THEN 100
90 GOSUB 1850:GOSUB 1760:GOSUB 2500
100 GOSUB 790
110 RESTORE 130:FOR a=0 TO 11
120 READ x:POKE a+&7804,x:NEXT
130 DATA 0,0,2,60,3,0,0,23,15,0,&8A,&69
140 GOSUB 580:PEN 1:LOCATE 4,22:PRINT CHR$(135);STRING$(30,CHR$(131));CHR$(139)
150 LOCATE 4,23:PRINT CHR$(133);STRING$(30,CHR$(143));CHR$(138)
160 LOCATE 4,24:PRINT CHR$(141);STRING$(30,CHR$(140));CHR$(142)
170 LOCATE 33,8:PRINT"SCORE":TAGOFF
180 PEN 1:LOCATE 33,5:PRINT"LIVES":GOSUB 540
190 WHILE PEEK(dead)=0 AND PEEK(expl)<>200
200 IF PEEK(s2)=5 THEN SOUND 3,200,30,5,0,1:POKE s2,9
210 IF PEEK(s2)=2 THEN SOUND 3,500,10,5,0,0,1:POKE s2,9
220 IF PEEK(s2)=7 THEN SOUND 3,200,5,5:POKE s2,9
230 POKE &7803,INT((RND*1000)/500)
240 d%=0:IF INKEY(71)=0 THEN d%=129 ELSE
```

```
IF INKEY(63)=0 THEN d%=1 ELSE IF INKEY(37)=0 THEN d%=204 ELSE IF INKEY(38)=0 THEN d%=76
250 IF INKEY(67)=0 THEN RUN
260 IF d%<>0 THEN POKE &7810,d%:CALL mov char
270 CALL drawscr:CALL timer:IF PEEK(s1)=3 THEN SOUND 1,800,7,5
280 sc=sc+(10*PEEK(&7805)):LOCATE 35-LEN(STR$(sc))/2,9:PRINT sc:POKE &7805,0
290 IF sc/5000=INT(sc/5000) AND Li%<4 AND sc<>0 THEN Li%=Li%+1:GOSUB 540
300 WEND
310 POKE (PEEK(&780F)*256+PEEK(&780E)),0:POKE &780E,&8A:POKE &780F,&69:POKE &780D,&80:POKE &698A,6:POKE &780B,23:POKE &780C,15
320 IF PEEK(dead)<>0 AND PEEK(&7807)<>0 AND Li%<1 THEN Li%=Li%-1:GOSUB 530:POKE dead,0:CALL drawscr:GOTO 180
330 WHILE INKEY$<>"":WEND
340 IF PEEK(dead)=1 THEN 470
350 REM FINISHED
360 CALL calcbonus:bonus=PEEK(&7804)
370 IF bonus=0 THEN 450
380 b=0:FOR a=1 TO bonus:b=b+1:sc=sc+10
390 IF sc/5000=INT(sc/5000) AND Li%<4 THEN Li%=Li%+1:GOSUB 540
400 SOUND 3,1000-(a*10),5,5
410 LOCATE 35-LEN(STR$(sc))/2,9
420 PRINT sc:IF b=4 THEN b=1
```

Turn to Page 56 ►

PROGRAM STRUCTURE

40-90	Initialisation
100-180	Set up the screen
190-300	Main routine
310-340	Dead or screen finished?
350-460	Calculate bonus
470-520	Game over
530-530	Lost a life sound
540-540	Display number of lives
550-570	Display next level message
580-780	Set puddings, keys, doors and dynamite
790-1750	Poke character data
1760-1840	Calculate screen addresses for machine code print routine
1850-2430	Machine code data
2440-2490	Initial screen display
2500-3110	Poke map data into memory
3120-3160	Machine code addresses

◀ From Page 55

```

430 PEN b:LOCATE 33,8:PRINT"BONUS"
440 PEN 1:NEXT:LOCATE 33,8:PRINT"SCORE"
450 POKE expl,0:lev%=lev%+1
460 GOSUB 550:GOTO 110
470 REM KILLED
480 GOSUB 530
490 PEN 1:PAPER 3:FOR a=6 TO 8:LOCATE 16
,a:PRINT SPACE$(11):NEXT:PAPER 0:LOCATE
5,23:PRINT" Press spacebar to play again

500 p%=1:WHILE INKEY$(<>CHR$(32)):PEN p%
510 LOCATE 17,7:PRINT"GAME OVER":p%=(p%+
1) MOD 2
520 WEND:RUN
530 FOR b=1 TO 5:FOR z=1000 TO 0 STEP -2
00:SOUND 3,z,10,7-b:NEXT:NEXT:RETURN
540 LOCATE 34,6:FOR x=1 TO li:PRINT CHR
$(255);:NEXT:PRINT" ":RETURN
550 PEN 0:FOR a=2 TO 19:LOCATE 12,a:PRIN
T STRING$(18,CHR$(143)):NEXT
560 PEN 1:LOCATE 14,8:PRINT"Get ready fo
r":INK 3,12,9:PEN 3:LOCATE 17,10
570 PRINT"LEVEL";lev%:RETURN
580 CALL expand:RESTORE 720
590 POKE &780E,&8A:POKE &780F,&69
600 POKE &698A,6:FOR a=1 TO 12
610 READ addr:POKE addr,3:NEXT
620 FOR a=1 TO 8:READ addr:POKE addr,2
630 NEXT:FOR a=1 TO 4
640 READ addr:POKE addr,5:NEXT
650 ad=&7811:FOR a=1 TO 4:READ addr
660 POKE addr,8:POKE ad+1,addr\256:POKE
ad,addr MOD 256:POKE ad+2,1
670 POKE ad+3,0:ad=ad+4:NEXT
680 FOR a=1 TO 200
690 add=INT(RND*4200)+&6633:IF PEEK(add)
<>0 THEN 690
700 POKE add,7:NEXT:INK 3,6:CALL drawscr
710 PEN 1:FOR a=1 TO 20:LOCATE a+10,1:PR
INT CHR$(143):LOCATE a+10,20:PRINT CHR$(
143):LOCATE 11,a:PRINT CHR$(143):LOCATE
30,a:PRINT CHR$(143):NEXT:RETURN
720 DATA &6745,&674c,&6875,&687c
730 DATA &6897,&6986,&709d,&7065
740 DATA &722d,&736a,&7518,&75B0
750 DATA &66B1,&698f,&69C9,&6B05
760 DATA &6750,&6d86,&6EC4,&714b
770 DATA &6661,&6a68,&6d6f,&73D1
780 DATA &6648,&69Fb,&6bAb,&75B5
790 addr=&627F:RESTORE 870:FOR a=0 TO 9:
FOR b=0 TO 7:READ a$,c$:chk=0
800 FOR c=1 TO 15 STEP 2:POKE addr,VAL("
&H"+MID$(a$,c,2))
810 chk=chk+PEEK(addr):addr=addr+1:NEXT
820 IF HEX$(chk,3)<>c$ THEN MODE 1:PEN 1
:PRINT"Error in character":a+1;"data":CA
LL &BB45:PRINT">>>";a$,c$;"<<<":END

```

```

830 NEXT:NEXT
840 SYMBOL 255,60,66,102,66,36,60,0,0
850 RETURN
860 REM Character 1
870 DATA 0000000000000000,000
880 DATA 0000000000000000,000
890 DATA 0000000000000000,000
900 DATA 0000000000000000,000
910 DATA 0000000000000000,000
920 DATA 0000000000000000,000
930 DATA 0000000000000000,000
940 DATA 0000000000000000,000
950 REM Character 2
960 DATA FEFFDFEF EF FFDFEF,7F0
970 DATA FEFFDFEF A5A5A5A5,68C
980 DATA F7F7F7F7 F7F7F7F7,7B8
990 DATA F7F7F7F7 5A5A5A5A,544
1000 DATA FEFFDFEF EF FFDFEF,7F0
1010 DATA FEFFDFEF A5A5A5A5,68C
1020 DATA F7F7F7F7 F7F7F7F7,7B8
1030 DATA F7F7F7F7 5A5A5A5A,544
1040 REM Character 3

```

MAIN VARIABLES

lev%	Level
li%	Lives
s1,s2	Flags for various sounds
sc	Score
d%	Direction

```

1050 DATA 0000000000000000,000
1060 DATA 0000000000000000,000
1070 DATA 0000000000001880,089
1080 DATA 00070E0000AFAF00,173
1090 DATA 110F1F0801AFAF88,22E
1100 DATA 030F0F4C23AFAF8C,27A
1110 DATA 030F0F4C63AFAFAC,2DA
1120 DATA 314F5F4810F0F080,397
1130 REM Character 4
1140 DATA 70F0F0E06000E168,409
1150 DATA 60300F6860C37868,3E8
1160 DATA 609696860B47868,3E8
1170 DATA 6087966860C37868,3E8
1180 DATA 60870F6860870F68,2BC
1190 DATA 60B4F06860969668,460
1200 DATA 60C378686030F0F68,30A
1210 DATA 6000E16870F0F0E0,409
1220 REM Character 5
1230 DATA 70F0F0E0610F0F68,417
1240 DATA 61F0F06861969668,49E
1250 DATA 61A55A6861C33C68,390
1260 DATA 61F0F068610F0F68,390
1270 DATA 61C30F68610F0F68,282
1280 DATA 610F0F6861F0F068,390
1290 DATA 61871E6861F0F068,417
1300 DATA 610F0F6870F0F0E0,417
1310 REM Character 6
1320 DATA 0000000000000000,000
1330 DATA 0000000000000000,000
1340 DATA 000030800000060C,01D
1350 DATA 0000C060F0F0C06,042
1360 DATA 0F0F0C060D080C06,057
1370 DATA 0D08060C00000308,032
1380 DATA 0000000000000000,000
1390 DATA 0000000000000000,000
1400 REM Character 7
1410 DATA 0000000000000E00,0E0
1420 DATA 0010FE000031FF80,2BE
1430 DATA 0073FE8E00F7EC87,469
1440 DATA 00F0E00700A5A400,320
1450 DATA 1018120010A58400,1A3
1460 DATA 105A5A0000842400,16C
1470 DATA 0052480000308000,14A
1480 DATA 0000000000000000,000
1490 REM Character 8
1500 DATA 020202027272700,07B
1510 DATA 0303030010101000,039
1520 DATA 0080808011DDDDCC,417
1530 DATA 11DDDDCC11DDDDCC,52E
1540 DATA 11DDDDCC11DDDDCC,52E
1550 DATA 11DDDDCC11DDDDCC,52E
1560 DATA 11DDDDCC11DDDDCC,52E
1570 DATA 11DDDDCC00000000,297
1580 REM Character 9
1590 DATA 000000000030C000,0F0
1600 DATA 0070E00000000B000,200
1610 DATA 00D0B00000F0F000,360
1620 DATA 006060000030C000,1B0
1630 DATA 0C030C030F00000F0,3C0
1640 DATA 10C030800070E000,200
1650 DATA 0030C00000E07000,240
1660 DATA F08010F0C0000030,360
1670 REM Character 10
1680 DATA 0000000000000000,000
1690 DATA 0000000000000000,000
1700 DATA 0000000000000000,000
1710 DATA 0000000000000000,000
1720 DATA 0000000000000000,000
1730 DATA 0000000000000000,000
1740 DATA 0000000000000000,000
1750 DATA 0000000000000000,000
1760 REM Calculate addresses
1770 RESTORE 1830:padd=&61DD
1780 FOR r=0 TO 8:READ addr:FOR c=0 TO 8
1790 t%=HEX$(addr+(4*c),4)
1800 POKE padd,VAL("&H"+RIGHT$(t$,2))
1810 POKE padd+1,VAL("&H"+LEFT$(t$,2))
1820 padd=padd+2:NEXT:NEXT:RETURN
1830 DATA &c066,&c106,&c1a6,&c246
1840 DATA &c2e6,&c386,&c426,&c4c6,&c566
1850 REM Poke machine code data
1860 RESTORE 1930:ln=1930
1870 FOR adr=&7823 TO &7AA6 STEP 13
1880 READ byte$:chk=0:FOR i=0 TO 12
1890 v=VAL("&"+MID$(byte$,i*2+1,2))
1900 POKE adr+i,v:chk=chk+v:NEXT
1910 IF chk<>VAL("&"+RIGHT$(byte$,3)) TH
EN PRINT"ERROR IN LINE":ln:STOP
1920 ln=ln+10:NEXT:RETURN
1930 DATA C0047A21DB612221782A0E7801414
1940 DATA 3401AFED4206090E09E5C55E16457
1950 DATA 00EB292929292929117F6219EB307
1960 DATA 2A21782323222178E23666F0E348
1970 DATA 02E506081A7713231A7713231A29D
1980 DATA 7713231A77132B2B3E088467303
1990 DATA 10EBE1C50E5009C10D20DCC1E1671
2000 DATA 230D20B71143001910AFC911FF40C
2010 DATA 642110130101001AF0E420023D225
2020 DATA 12AF13ED4220F33A0D78FE03C0596
2030 DATA 3C320D78C921FF645450130103408
2040 DATA 133601EDB0110060213366063534D
2050 DATA 0E08C50608CDB78C1130D20F54FF
2060 DATA C50604CDB781301080009C1103E5
2070 DATA E5C91ACB27380236002310F7C951D
2080 DATA 3E4A21047977AF3205783A10783BD
2090 DATA CB072803064270CBBF4F0600A74B3
2100 DATA 2A07F8ED4A7EFE01C8F5E5CD71744
2110 DATA 79E1F1FE04C8FE02282CFE0528694
2120 DATA 21FE072844FE08286CED5B0E784FA
2130 DATA 3A0D783CFE0428023E09127E32330

```



```

2140 DATA 0D78220E783606C9E5CD8978E15C6
2150 DATA 180E5210778363C23360321E8454
2160 DATA C611C40706083EF00E3C77230D3CF
2170 DATA 20FB1910F6E118C03A09783C3251C
2180 DATA 09783E0132057818B23A10782131C
2190 DATA 0B78FE81200235C9FE01200234477
2200 DATA C923FECC200235C9FE4CC034C96DD
2210 DATA 3E01320A78C90080C0E03A0678494
2220 DATA 3D320678A7C03E033206783A08387
2230 DATA 7816005F21957919EB3A07784F428
2240 DATA 060021E7C6091A4F06083E087130B
2250 DATA 846710F93EFF21087835BEC0365BB
2260 DATA 032B353CBEC03C320A78C916003EC
2270 DATA 21FF640105137FE02280BFE05451
2280 DATA 2811230B78B120F1C93A0478C64E6
2290 DATA 0A32047818EF3A0478C60518F444C
2300 DATA 211178CD1D7A211578CD1D7A21441
2310 DATA 1978CD1D7A211078CD1D7A9C014D9
2320 DATA 0100E5723666F097EFE092867479
2330 DATA FE06285E01FFFF09097EFE0928548
2340 DATA 59FE06285023014C00097EFE093D3
2350 DATA 284BFE06284201B4F09097EFE523
2360 DATA 09283DFE062834014C0009E0E13F0
2370 DATA E523237E23666FEB424B097EA7547
2380 DATA 2824E123237EED477237EEFF627
2390 DATA 77C923234E23463EAD8080A92B49C
2400 DATA 77233EFA877C93E01320A78364E8
2410 DATA 08545DA7ED423600E123237123480
2420 DATA 702B2B722B73C90000000000029F
2430 PEN 3:LOCATE 12,5:PRINT"DYNAMITE DU
NGEONS":PEN 2:RESTORE 2490:FOR a=1 TO 5
2440 READ a$:LOCATE 15,7+(a*2):PRINT a$
2450 NEXT:PEN 1:LOCATE 10,20:PRINT"Press
spacebar to play"
2460 IF INKEY(67)=0 THEN CALL &BB45:MODE
1:PEN 1:END
2470 IF INKEY$<>" " THEN 2460
2480 CLS:RETURN
2490 DATA "Z - LEFT","X - RIGHT","K - UP
","M - DOWN","Q - QUIT"
2500 REM poke map
2510 ln=2580:addr=&6000:RESTORE 2580
2520 READ a$,c$:WHILE a$<>"END"
2530 chk=0:FOR a=1 TO 17 STEP 2
2540 t$=MID$(a$,a,2):IF a=17 THEN t$=RIG
HT$(t$,1)+0"
2550 POKE addr,VAL("&"+t$)):chk=chk+PEE
K(addr):addr=addr+1:NEXT
2560 IF chk<>VAL("&"+c$) THEN CALL &BB45
:MODE 1:PRINT"Error in data line":ln:PRI
NT HEX$(chk):END
2570 ln=ln+10:READ a$,c$:WEND:RETURN
2580 DATA 3E00000000004220800,06C
2590 DATA 007FEFF4A77402EB0E,54A
2600 DATA F7020114B73422A900,2C4
2610 DATA 413E7D17A1B5FA0800,36B
2620 DATA 7F1EE1B237B402A902,3E6
2630 DATA 43C28C227097BEA902,441
2640 DATA 407AB8E6E4C402A806,50A
2650 DATA 4302A20CCE75FAE902,439
2660 DATA 77FE8FF89F04020902,3CA
2670 DATA 0608F803BFF7EFE802,4B6
2680 DATA D0EB8DF60004020802,36C
2690 DATA 5FA80117FFF5FAFF0E,5EC
2700 DATA 10ABBD0009500002,2FD
2710 DATA 76AA051F00957FFF0A,3F7
2720 DATA 048AF5007E90200102,2D2
2730 DATA F5AE05EF40DFAFF906,5BE
2740 DATA 15ABDC085E10240100,237
2750 DATA 552A07FFC3D774050E,478
2760 DATA 557AF4000011144500,22D
2770 DATA 750A05EF7FF574E507,4B0
2780 DATA 45EBBD094024144500,2B3
2790 DATA 6D08017B5FAFC40502,2E8
2800 DATA 2D7BFF4140A07C8502,3E9
2810 DATA 8D0A005F7EAF7B00E,487
2820 DATA 2DEAEFD002A0100000,388
2830 DATA 2508281F7EBDFFFF0F,49D
2840 DATA 757FAC140A5002000,3B4
2850 DATA 2508825B5FA16FA30E,3FC
2860 DATA 2DEAEFF1502F24380A,472
2870 DATA 890A080157A1E40A0A,322
2880 DATA 39EB7BFF542F2EEA0A,4D9

```

```

2890 DATA 000940005701002A0A,16B
2900 DATA 3F7DE7FD1FFFFA202,633
2910 DATA 0C080C001C1104AE0A,19F
2920 DATA EFCF79DDFFD7242C0A,5DA
2930 DATA 085803040013AEEA0A,276
2940 DATA 7B53FE76FD0F020A30A,592
2950 DATA 435002228017FFA802,315
2960 DATA 5F5FAFABFD0222B0A,52E
2970 DATA 51400202841FAAE902,2EB
2980 DATA 557FFDEF5F02A090A,569
2990 DATA 554200008515EAFD02,338
3000 DATA 544ABF6C0D55080506,348
3010 DATA 13CABC4C85542FFF00,3EC
3020 DATA FBC881C0F45A00407,560
3030 DATA 090AFFFD85D7BDF504,55D

```

```

3040 DATA 604BA0048510E01504,319
3050 DATA 3FEA2FF7EF77BDF506,5C7
3060 DATA 024808100200801504,139
3070 DATA 4ADFC99FFFF6FDF505,6C8
3080 DATA 6A104BD10712801504,284
3090 DATA 2AF77BD5D05FFDF506,5F2
3100 DATA 2A0000041FC0001100,11E
3110 DATA END,END
3120 drawscr=&7823:expand=&78AA
3130 movchar=&78E6:timer=&7999
3140 calcbonus=&79DB
3150 dead=&780A:expl=&7809
3160 s1=&7806:s2=&780D:RETURN

```



LINE	CHSUM	LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	= 51968	650	= 49024	1290	= 03392	1930	= 24992
20	= 46400	660	= 22112	1300	= 23968	1940	= 30496
30	= 41792	670	= 02368	1310	= 36736	1950	= 34496
40	= 65312	680	= 43360	1320	= 36448	1960	= 53248
50	= 29536	690	= 27712	1330	= 36448	1970	= 25664
60	= 18976	700	= 09280	1340	= 09664	1980	= 38944
70	= 12480	710	= 45728	1350	= 52032	1990	= 34944
80	= 64192	720	= 63136	1360	= 42496	2000	= 42144
90	= 00480	730	= 17344	1370	= 26624	2010	= 48512
100	= 54912	740	= 24288	1380	= 36448	2020	= 58176
110	= 40480	750	= 22624	1390	= 36448	2030	= 33440
120	= 51680	760	= 54624	1400	= 48544	2040	= 04672
130	= 55776	770	= 19008	1410	= 40928	2050	= 07296
140	= 04384	780	= 20288	1420	= 61056	2060	= 13184
150	= 37920	790	= 26816	1430	= 24256	2070	= 26944
160	= 19136	800	= 16320	1440	= 64576	2080	= 34880
170	= 03360	810	= 33920	1450	= 10944	2090	= 10752
180	= 56448	820	= 31648	1460	= 26240	2100	= 45536
190	= 51296	830	= 27552	1470	= 65024	2110	= 33056
200	= 21888	840	= 36448	1480	= 36448	2120	= 30848
210	= 32992	850	= 27008	1490	= 41568	2130	= 04992
220	= 21312	860	= 04448	1500	= 18272	2140	= 03008
230	= 16448	870	= 36448	1510	= 59008	2150	= 36128
240	= 55552	880	= 36448	1520	= 34272	2160	= 11456
250	= 07648	890	= 36448	1530	= 14048	2170	= 62368
260	= 65408	900	= 36448	1540	= 14048	2180	= 37664
270	= 44480	910	= 36448	1550	= 14048	2190	= 24736
280	= 44416	920	= 36448	1560	= 14048	2200	= 27008
290	= 01632	930	= 36448	1570	= 36272	2210	= 16224
300	= 12864	940	= 36448	1580	= 36928	2220	= 37568
310	= 64416	950	= 18176	1590	= 01952	2230	= 53888
320	= 43680	960	= 62368	1600	= 15584	2240	= 23136
330	= 58848	970	= 48992	1610	= 15200	2250	= 09856
340	= 11360	980	= 34816	1620	= 46208	2260	= 59488
350	= 06464	990	= 51232	1630	= 03104	2270	= 04480
360	= 23200	1000	= 62368	1640	= 62592	2280	= 59264
370	= 65088	1010	= 48992	1650	= 15648	2290	= 48896
380	= 00352	1020	= 34816	1660	= 18848	2300	= 51616
390	= 20448	1030	= 51232	1670	= 21664	2310	= 25440
400	= 46592	1040	= 29984	1680	= 36448	2320	= 15136
410	= 03840	1050	= 36448	1690	= 36448	2330	= 02368
420	= 39360	1060	= 36448	1700	= 36448	2340	= 40192
430	= 07264	1070	= 59360	1710	= 36448	2350	= 50144
440	= 38624	1080	= 01792	1720	= 36448	2360	= 24736
450	= 53536	1090	= 62688	1730	= 36448	2370	= 43648
460	= 56864	1100	= 27520	1740	= 36448	2380	= 42496
470	= 37152	1110	= 13760	1750	= 36448	2390	= 30400
480	= 15392	1120	= 57888	1760	= 06336	2400	= 56000
490	= 36896	1130	= 60352	1770	= 57120	2410	= 22912
500	= 62336	1140	= 35904	1780	= 06592	2420	= 60992
510	= 60768	1150	= 36576	1790	= 48512	2430	= 57056
520	= 05024	1160	= 01184	1800	= 52192	2440	= 17440
530	= 47584	1170	= 59392	1810	= 43040	2450	= 54912
540	= 07168	1180	= 39392	1820	= 25984	2460	= 49568
550	= 40704	1190	= 18720	1830	= 18368	2470	= 17504
560	= 40800	1200	= 24352	1840	= 09856	2480	= 57472
570	= 15104	1210	= 24928	1850	= 17504	2490	= 43552
580	= 47488	1220	= 55776	1860	= 15872	2500	= 16992
590	= 23136	1230	= 62656	1870	= 29824	2510	= 29344
600	= 18304	1240	= 53888	1880	= 42208	2520	= 16000
610	= 32064	1250	= 35712	1890	= 10720	2530	= 29952
620	= 03712	1260	= 58592	1900	= 36576	2540	= 50880
630	= 49472	1270	= 33472	1910	= 53600		
640	= 36864	1280	= 19488	1920	= 10240		

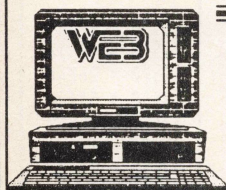
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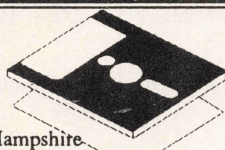
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STAR LC10 PARALLEL F&T NLQ PRINTER (WHILE STOCKS LAST)	297.85	208.50 A
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RIBBON FABRIC-STAR LC10	PKT 2	4.60 F
RIBBON FABRIC-STAR NL10	PKT 2	5.36 F
RIBBON FABRIC-CITIZEN 120D	PKT 2	4.86 F
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PCB, MAIN - DMP2160	60.38	32.34 B
PRINTER MECHANISM ASSEMBLY - DMP2000/3000	86.25	38.81 B
PRINTER MECHANISM ASSEMBLY - DMP2160	93.15	46.58 B
MOTOR, SET LF, PAPER FEED - DMP2000/2160/3000/3160	28.91	19.27 D
MOTOR, SET CR, HEAD DRIVE - DMP2000/3000	30.84	20.56 D
MOTOR, SET CR, HEAD DRIVE - DMP2160/3160	63.20	42.14 D
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Cheep database

I HAVE an Amstrad CPC464 and would like the help of one of your readers. I am a budgerigar breeder and require to use the computer to keep my breeding records. I would be willing to pay for such a program. — **Doug Cleland, Carlisle.**

● Looking at your sample of the sort of information you want to store, you don't need a program specifically written to cope with this type of record.

Your requirements should be filled by a general purpose database program such as Masterfile.

You can obtain this direct from the manufacturers: Campbell Systems, 7 Station Rd., Epping CM16 4HA.

More rom to manoeuvre

I HAVE a few queries which have been bugging me for some time now. I would be very grateful if you could provide me with the answers — and I promise not to ask any more questions for the rest of the year!

I would like to buy Protext. Looking back through the

past 10 issues or so I could not find a review which told me how to fit the rom version to my CPC and the advantages / disadvantages (apart from price) between the rom and disc versions.

Could you explain to me the use of:

```
WHILE INKEY$<>"":WEND
```

in conjunction with keyboard input? Hitherto the method:

```
10 a$=INKEY$
20 a$="" THEN 10
30 continue program...
```

used to feature in the majority of programs. Then suddenly the use of the WHILE and WEND appeared. — **K.G. Harding, Gillingham.**

● The main advantages of Protext on rom are that it is instantly available without having to load it from disc, and it gives greater text space than the tape or disc versions — about 40k. All you need in order to fit it is a rom board.

The two program segments you quote do different jobs. The WHILE...WEND version waits until no key is being pressed. This is used to clear unwanted characters from the keyboard

buffer, and is equivalent to:

```
10 IF INKEY$<>" THEN GO
TO 10
```

GOTOs are frowned upon by professional programmers, so WHILE...WEND is preferred, not that it matters. Your second version waits until a key is pressed, which is the opposite process. It could be rewritten like this:

```
10 a$="" WHILE a$="" a$=
INKEY$:WEND
```

Educational programs

I HAVE recently bought a CPC6128 for my 12-year-old son, and would be grateful if you could supply me with details of some educational discs and where to buy them from. — **Monica Depasquale, Malta.**

● Apart from our own discs, regularly advertised in the mail order section, try these companies:

School Software Ltd, Tait Business Centre, Dominic St., Limerick, Ireland.

LCL Educational Software, Melody House, Grays Road, Henley-on-Thames, Oxfordshire.

Disgusted by a comma?

REGARDING *Disgusted of Didcot* in your September issue, I typed in the Telstar listing and all the checksums checked out. Donning my Sherlock Holmes hat I discovered that if a decimal point is entered instead of a comma in the INK 3,18 bit of line 20, and the first minus sign is omitted in line 30, the results match up with *Disgusted's*.

In Mr. Harrison's letter in the October issue, Control+Tab toggles between insert and overstrike mode when editing a line.

Who should I send a program to for evaluation with a view to publication? It is an accounts/banking package which took me nearly two months to write, and

works on the CPC6128/664. — **J.C. Bownes, Sheffield.**

● Yes I did know about Control+Tab, but forgot all about it when writing the original reply. Thanks to all the people who wrote in to tell me what an idiot I am.

Our sister company, Database Software, is always happy to evaluate good quality programs. However, your letter does highlight some points to look out for when writing a program which you want somebody else to market.

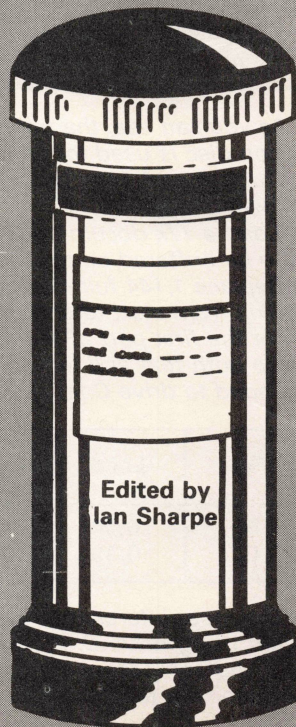
Before you embark on a project you must be sure that the program is designed to fill a need, in other words that lots of people are going to want to buy it. No company is going

to spend money distributing and advertising a program which few people will want.

You also need to make sure that there are companies which handle the sort of program you intend writing, or you're likely to be faced with a string of rejections and the hassle of marketing it yourself.

You must aim for the maximum appeal possible, and in this respect cutting out disc-owning CPC464 owners will count against your program.

Apart from the extra ram in the CPC6128, there are no extra features on these machines which can't be got round with a little extra programming on the CPC464.



Edited by
Ian Sharpe



Help with machine code

WITH reference to my letter printed in the September issue, I would like to add that I offer any help I can to those who have machine

code queries. If posting a letter from England I ask that you enclose 28 pence, not stamps because I can't use English stamps here. — **Niall Brady, Holywell Rd., Sligo, Eire.**

● Thanks Niall. Unfortunately space prevented me including the program you sent.

Othello programs

I WOULD be grateful if you could tell me of any Othello games available other than the version in your Ten of the Best compilation. I would prefer a program that would have the playing strength of someone with a British Othello Federation

rating of between 1250 and 1500.

The reason for this is that I would like to improve my game with qualification for the national finals in mind. Could you tell me who wrote the version on your compilation? — **Roy Arnold, Worksop.**

● Our version was written by Robin Nixon and was originally a magazine listing. Unfortunately I haven't seen an Othello that I as a beginner couldn't beat with a little practice.

Pen pal needed

OVER here in New Zealand we get your mag late. I'm not complaining, but the

games you review are always out of stock. Can you tell me the address of Hewson so I can buy Exolon?

I would like a pen pal, preferably a boy 11 to 13 years old with lots of game experience. — **Sancar Kavavas, 13 Valdese Rise, Browns Bay, Auckland, New Zealand.**

● Hewson markets its games through Gremlin, but it is probably better if you contact a mail order house which will deal with overseas customers. Exolon appeared on a compilation called Four Smash Hits From Hewson which is better value for money. Have a look through the adverts — M.J.C. Supplies should be able to help.

Silicon disc feedback



IN response to your request in the October issue for feedback on the suitability of the dk'Tronics silicon disc, you may be interested in the following benchmark tests which I carried out.

All tests were run on a CPC6128 fitted with a standard 3in second disc drive as drive B, and an expanded 444k silicon disc as drive C. The operating system used was CP/M Plus, and all times are shown as minutes:seconds.

The first test involves the compilation of a CBasic program consisting of 21 separate disc files, with a total source file length of 2,454 lines.

Compiler	Source files	Work files	Relocatable	Time
A:	B:	B:	A:	6:50
A:	B:	C:	C:	5:06
A:	C:	C:	C:	3:35

As you can see, the timing is almost halved when the silicon disc is used for all disc operations.

The second test, using Protext, consisted of the following steps:

- Load a 77k document which, owing to its size, needs to be buffered on to disc.
- Replace 1,144 full stops with commas.
- Skip from start to end of document, and back again.

For the first part of the test Protext was configured to place both text and temporary file on drive B. This was changed to drive C for the second part.

Files	Load	Replace	Skip to end	Skip to start
B:	0:04	1:59	1:32	0:20
C:	0:19	0:54	0:29	0:05

The most interesting result is the extended load time when using drive C. Protext loads the entire document into the temporary file when using the silicon disc, however the temporary file is added to as editing con-

tinues when using the standard 3in drive.

Finally, with Supercalc2 I carried out the following with a 6K spreadsheet:

- Load program.
- Load spreadsheet.
- Save spreadsheet.

Program/files	Load program	Save file	Load file
B:	0:14	0:06	0:21
C	0:05	0:02	0:10

The silicon disc obviously performs well under disc-intensive processes, and I chose it instead of a 5.25in drive because of the dramatic reduction in program compilation times.

New users must consider the cost and relatively low capacity of the drive against the high throughput rate. It is also important to remember that the drive must be loaded with any required software, and that all files must be saved to a standard disc before switching off.

A submit file can be created to copy all required programs/files to the silicon disc as follows:

```
PIP
<B:=A:PIP.COM[VW]
<B:=A:D.COM[VW]
<
B:
D
```

This file will copy the the programs PIP and D to the disc, set drive B as the current drive, and execute program D.

To modify the search drive path under CP/M Plus, include the following in the profile.sub file:

```
SETDEF B:,A\; [TEMPORARY=B:]
```

I hope this information will be of use to other readers. — **J. Kershaw, Leicester**

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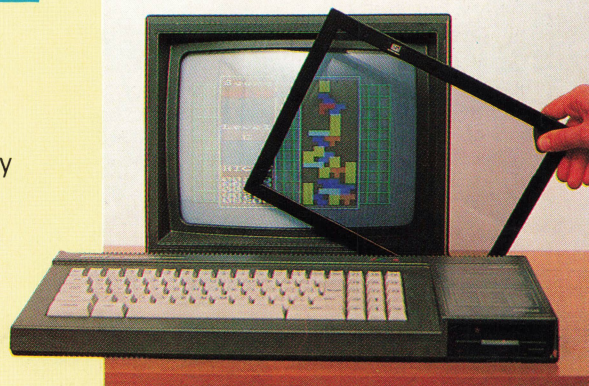
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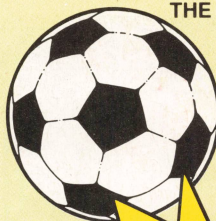
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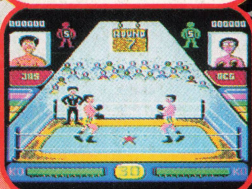
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